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Construction Methods AND EQUIPMENT

A McGRAW-HILL PUBLICATION

OCTOBER, 1957

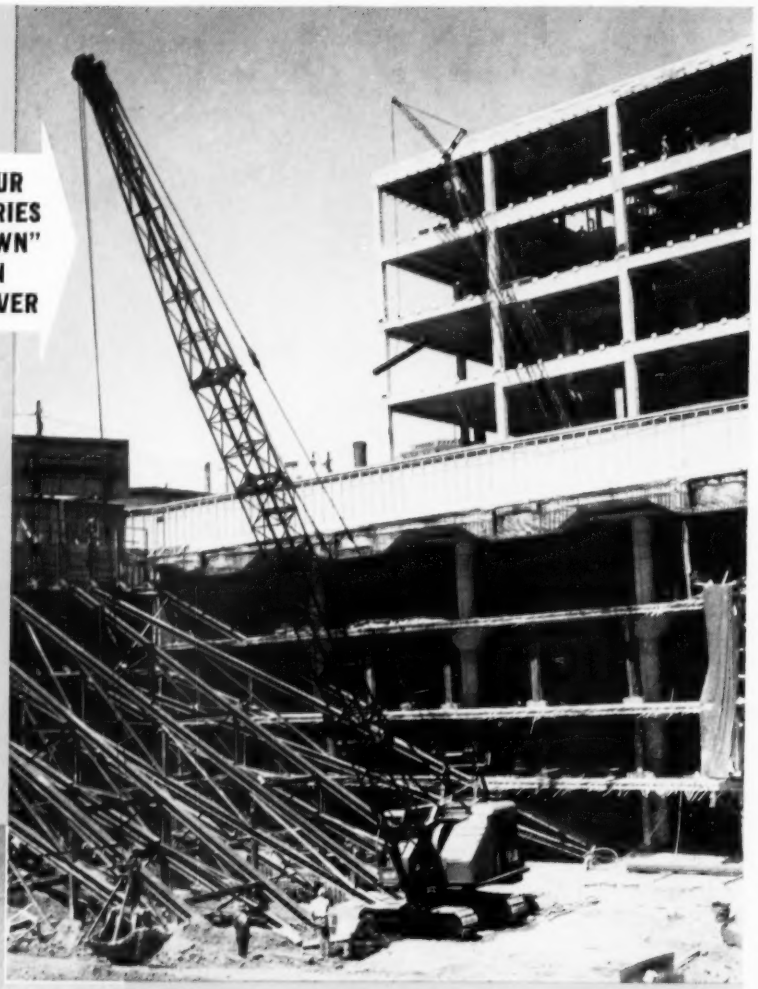
Scrapers slice through hill to produce fill for Virginia turnpike . . . page 2

CONTENTS, PAGE 4

FOUR STORIES "DOWN" IN DENVER

It's dependable, tough

YELLOW STRAND



LAYING TILE IN OHIO

Here's a "face-lifting" job on Denver's Court House Square. Webb & Knapp Construction Co. of Denver is excavating 4 stories below street level for a new hotel structure. The clamshell is equipped with Yellow Strand Wire Rope. In the background, another unit lifts pipe in construction of a new department store. This crane, equipped with an 80-foot boom, also uses Yellow Strand.

Six-ton tile laid in place with dependable Yellow Strand Wire Rope. It's a sewer installation for a new office building in Youngstown, Ohio. J. D. Fowler Co., Youngstown, owners of the crane, specify Yellow Strand because it stands up on tough jobs. Ask your Broderick & Bascom distributor to assist you on wire rope problems. Ask him about long-life Yellow Strand, Flattened Strand and "Powersteel."

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QUARRIES

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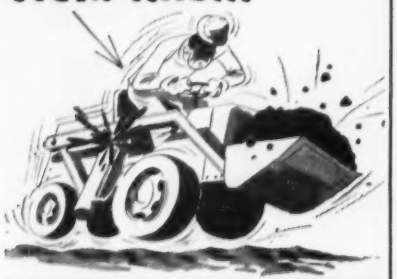

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Construction Methods AND EQUIPMENT

OCTOBER, 1957

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On the Cover

Working 20 hr daily, S. J. Groves Co.'s fleet of 10 Caterpillar scrapers are hauling more than 16,000 yd of borrow a day as work continues on Virginia's new Richmond-Petersburg Turnpike (CM&E, June, 1957). Groves' $3.2-million contract for a 4-mi stretch of the highway requires 1,250,000 yd of sandy clay borrow and 250,000 yd of common excavation. Haul distances average about 5,000 ft over flat terrain. One Caterpillar D9 and two Allis-Chalmers HD20 crawlers are used as pushers.

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VOLUME 39 NUMBER 10

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October, 1957

Pay Dirt in This Issue

You CAN Take It With You 90
Portable casting and prestressing bed can be moved to the job site. Made up of 10 sections, it is 300 ft long.

Teamwork Lays Lake Erie Pipe 97
Four contractors combine to move 37-ton precast pipe sections from casting yard to site on Lake Erie bottom.

Job-Built Machines Lay Ocean Pipeline 100
Contractor designs and builds two ingenious rigs to lay big concrete pipeline 2,000 ft out into the Pacific Ocean.

Build River Piers on Land 102
West coast contractor takes the pier construction part of the bridge job out of the water and handles it ashore.

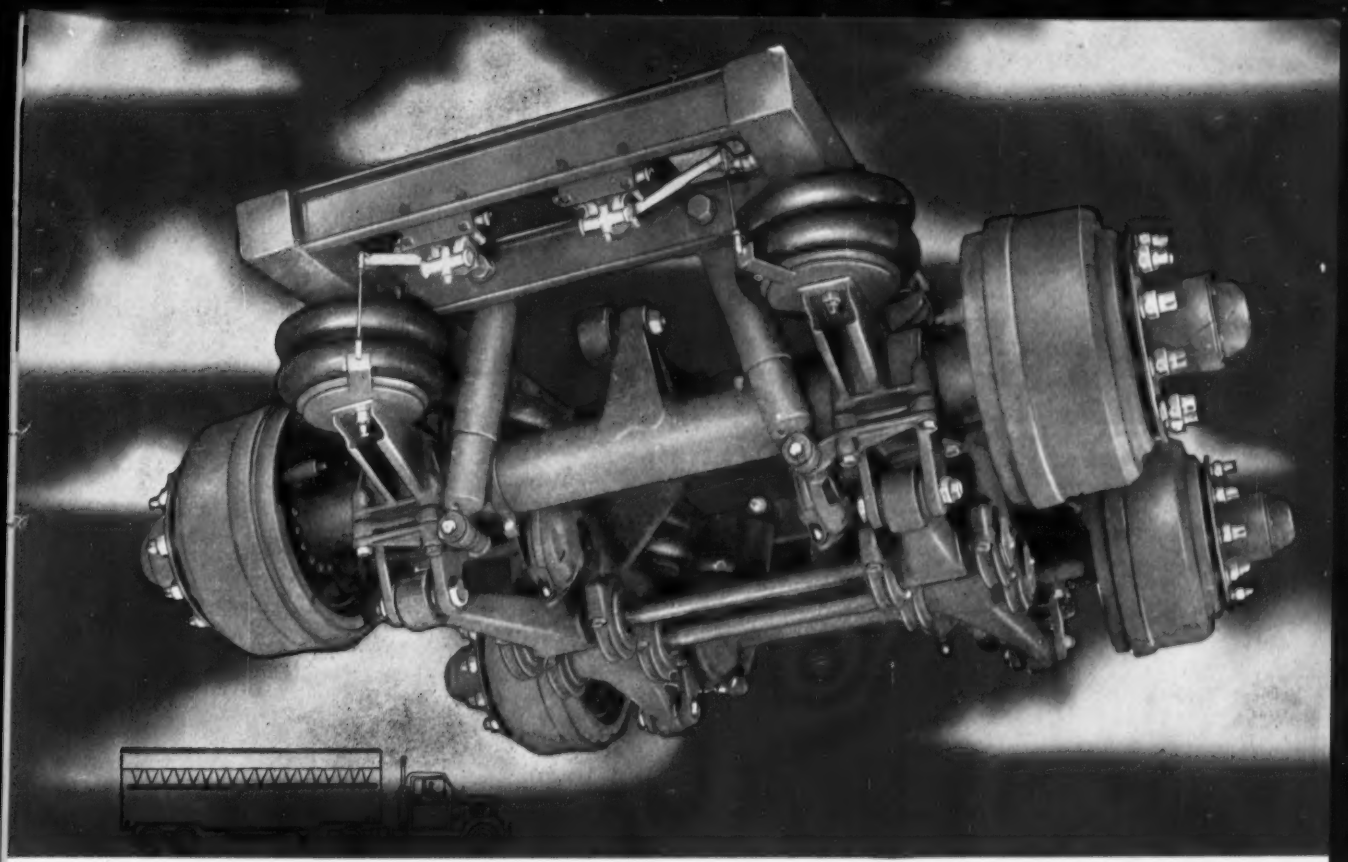
Giant Derricks Place Girder 111
Steel contractor solves a difficult bridge problem by building two 150-ton derricks to erect a 245-ton girder.

How Highway Departments Pay Contractors 116
A new survey conducted by the AASHO compares state practices of paying contractors, shows possible trends.

Canadians on the Seaway 124
Although few Americans realize it, Canadians have twice as much work as the U.S on the St. Lawrence Seaway. And they're doing it with a great deal of construction ingenuity. They're raising bridges, cutting miles of canal behind high dikes, and handling concrete with all the old tricks of the trade, plus a few new ones.

Construction News from Washington 13
Job Talk 17
Construction Machinery Price Trends 37
Construction Business 42
Picture of the Month 61
Construction News in Pictures 71
Construction 'Round the World 80
Editorial 89
Good Handling Cuts Costs 123
In-Place Mixing Saves Airfield 167
Construction Men in the News 173
Sales and Service 178
Construction Equipment News 184
The Maintenance Shop 235
Methods Memo 246

Next Month Circular steel forms cut costs for the contractor building the 42 piers that rise up to 135 ft high to carry the Berkshire Section of the New York Thruway across a wide Hudson River valley about 15 mi south of Albany.



TONS OF HIGHWAY CARGO FLOAT ON AIR

with the new Clark Air Suspension System for semi-trailers

Damage to fragile goods—to perishable cargo—to empty running vehicles can be *minimized* by the new Clark Air Suspension unit. This unique undercarriage, suitable for installation on new or in-use semis, allows both trailers and cargo literally to "float on air"!

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All Clark Air Suspension assemblies come as complete packages, ready for installation. Parts are interchangeable between single and tandem units. Either suspension assembly can be used on new trailers or those already in operation.

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Because compressed air does the flexing and rubber mountings are employed, no lubrication is needed. Tanker operators will find that tank splitting and cracking of returning "empties" is minimized. Operators of other types of trailers will also find their trailers lasting longer and requiring less maintenance.

Weight advantages . . .

Trailer manufacturers using the Clark Air Suspension System can lighten frame and body construction, increase longevity —without sacrificing load-carrying ability.

Why not investigate . . .

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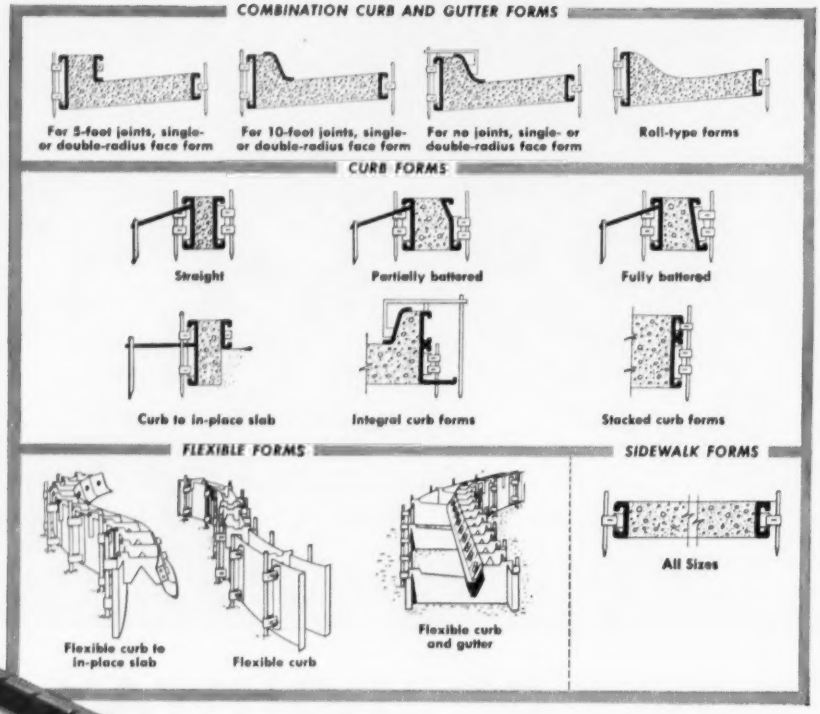

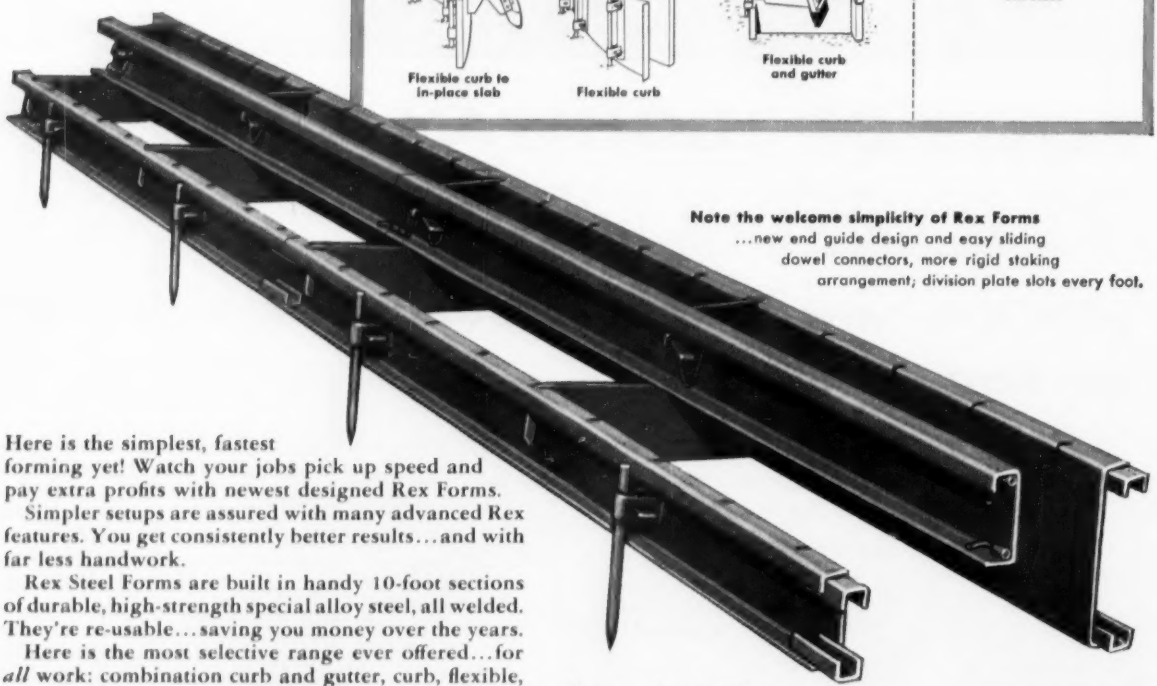

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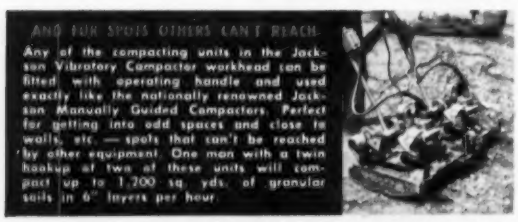
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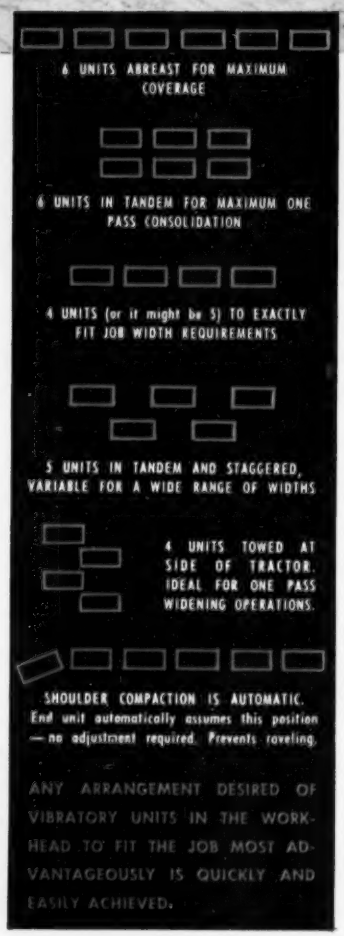
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4 UNITS TOWED AT SIDE OF TRACTOR. IDEAL FOR ONE PASS WIDENING OPERATIONS.
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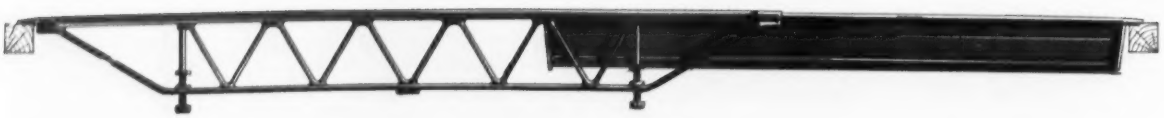

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Construction News From Washington

Washington, D.C.
October, 1957

A Boost for Urban Renewal

President Eisenhower's allocation of $250 million to cities for urban renewal projects has assured the future of a construction program that will generate $40 to $50 billion of construction in the next 30 years.

Already $4 to $5 billion of construction is definitely in the works—under construction or well advanced toward building design and contract letting stages. Some 80% of this work will be done by private redevelopers, including some of the country's largest industrial and commercial firms. The remainder will be awarded by municipal public works departments.

Southwestern and West Coast cities are swinging strongly into urban rebuilding programs of the kind already under way in 200 metropolitan areas and smaller localities of the East, Midwest and South. Recent enactment of enabling legislation in the states of Texas and Washington cleared the way for 35 additional cities to present grant applications to the federal government. California communities, too, are pushing their local rebuilding programs at a rate that promises to lift their state into top ranking for urban renewal activity.

From $4 to $5 of local money—mostly private investment, with a small share of public funds—is spent on urban renewal for each $1 of federal grant money. Up to June 30, Washington had committed $900 million to local projects. To this now is being added $250 million, with a further promise by the President to release more money if needed from the $200 million additional that Congress has given him.

The nation's cities report that they have new applications on the way for $700 million of grant funds. More than $200 million of these are already in the hands of the government and are being processed.

AAA Seeks More Roadbuilding Funds

A one-third increase in interstate highway construction costs can be met out of highway user tax revenues now flowing into the federal government. The American Automobile Association is laying the groundwork to demonstrate this fact in the next session of Congress when the lawmakers have to write legislation authorizing federal aid for non-interstate U.S. Routes in fiscal 1960 and 1961.

Much higher interstate cost figures are due to come out Jan. 12 when the Bureau of Public Roads reports the revised estimates of state highway departments to Congress. A 33-1/3% boost would increase the total for the 40,000 miles to be completed in the presently authorized interstate program from $27 billion to $40 billion. The 90% minimum federal share would step up from the old figure of $25 billion to nearly $35 billion. *continued on next page*

AAA officials are pointing out that the federal government now takes in some $3 billion a year from highways users, but only about $2 billion of these tax revenues go into the highway trust fund for construction of federal-aid roads. The billion-dollar difference, consisting of excise taxes paid by purchasers of motor vehicles, goes into the general fund for paying other expenses of the government.

If these receipts from motor vehicle sales could be earmarked for highways, the gap between revenues and costs could be close, AAA officials say.

Labor Rates Climb

There's little solace for contractors in the 1957 wage contract picture now just about complete. Neither the high-priced totals of this year nor the 1958 events that they foreshadow are calculated to make the industry's bargainers breathe easily.

The AFL-CIO says most major settlements in the construction industry have been for 15 to 20¢ an hour. In another key industry, trucking, the typical pay raise probably is not far behind. (Teamster officials, not averse to a little self-promotion in these days of trouble for their union, are even claiming the lead over all other unions in "real" wage gains for their members.)

All told, it appears that the 1957 average settlement in industry as a whole is going to climb substantially over 10¢ an hour, or some 3¢ an hour above 1956. Up to now, 1956 has borne an "expensive" label.

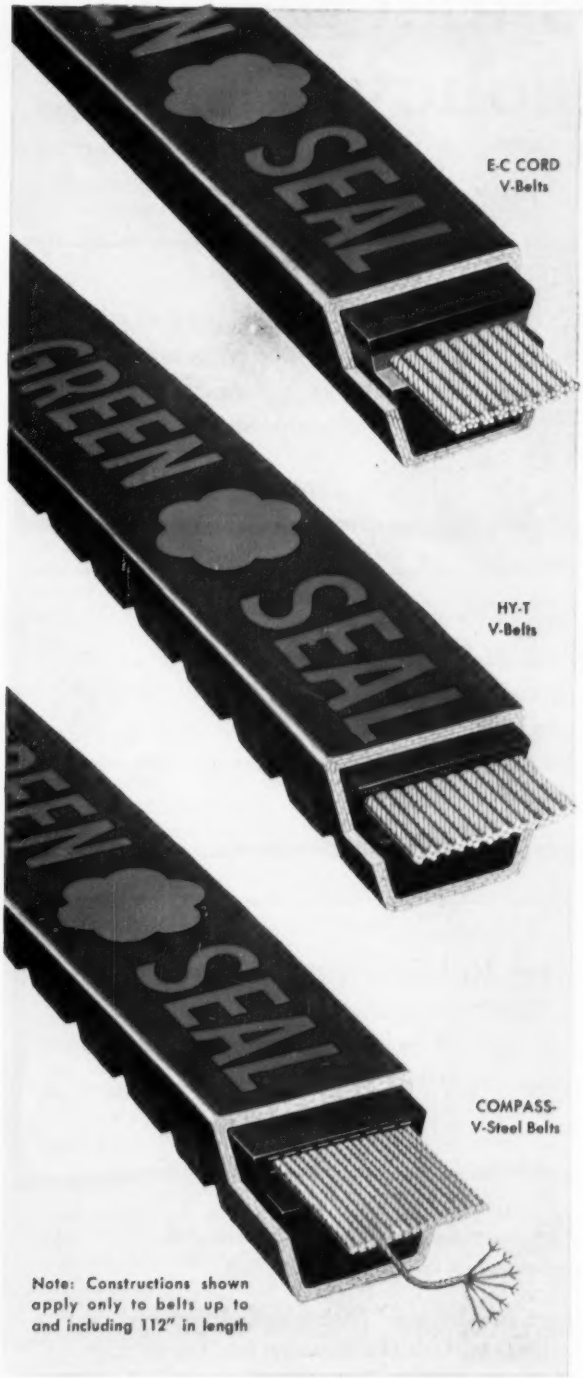
In the construction field, official U.S. government figures are now available for the first half of this year. They show that the average wage as of July 1, 1957, was up about 5.3% over the same date a year earlier. And the July, 1957, level was up a healthy 3.9% over January 1, 1957.

When final figures are in for this year, they'll reflect even higher levels, but probably not more than a percentage point or two.

Roadmen Get Together

Negotiations are moving smoothly but slowly for closer contractor cooperation between the American Road Builders Association and the Highway Division of the Associated General Contractors of America. The two organizations would be glad to see more of the fruitful harmony evident in their Michigan and Carolinas branches where the local contractors hold joint memberships in both national associations.

This kind of joint effort cannot be expected to become universal throughout the country, however. There is no reason to believe that ARBA and AGC will approve automatic joint membership in both associations for their highway contractor branches. Nor can anyone in Washington foresee any future agreement that would give the AGC Highway Division a dual role as the contractors division of ARBA.



Why V-Belts with the Green Seal ?

The Green Seal is put on each Goodyear multiple V-Belt for *your* protection. For it's your sign of a belt with dimensional stability – something long sought but only recently achieved in a complete line of V-belts.

What does dimensional stability mean to you? It means belt length remains the same from factory to drive. The length you order is the length you get. Matched sets stay matched. And mismatching – the biggest problem in belting multiple drives – is now a thing of the past.

How was this dimensional stability achieved? Until recently, stable belt length was possible only with steel cable load carriers as developed by Goodyear. But now it is also accomplished with synthetic cord through the exclusive Triple-Tempered 3-T process that stabilizes length by careful tempering with Tension, Temperature and Time.

Triple-Tempering also gives you a stronger, more shock- and stretch-resistant belt. Add "balanced construction" – with each component of the belt designed to its job – and you have a smoother-, longer-running belt which means maximum, trouble-free horsepower hours at minimum cost.

DIMENSIONALLY STABLE V-BELTS
with the GREEN SEAL by

GOODYEAR

THE GREATEST NAME IN RUBBER

The Goodyear Tire & Rubber Company, Dept. 794, Akron 16, Ohio

Please send me more information about how V-Belts with the Green Seal solve the major problem in belting multiple V-belt drives.

Name_____

Company_____

Street Address_____

City_____ **Zone**_____ **State**_____

Compass, E-C Cord, Hy-T, Green Seal—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

3 Differences that aren't in the policy

All Workmen's Compensation and Public Liability policies read pretty much alike. The difference shows up on the job.

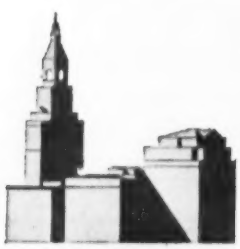
1. Effective Accident Control: When you're insured with The Travelers, expert safety engineers are available to help you prevent accidents *before* they happen. (Over the years The Travelers has spent more than $100 million on accident and fire prevention and inspection services.)

2. Prompt Claim Service: If you *do* have a claim, one of the 251 Travelers claim locations from coast to coast gives you prompt *on-the-spot* service. The burden of suits and settlements is off your shoulders. You're free to go ahead with your project.

3. Complete Employee Rehabilitation Program: The Travelers complete Employee Rehabilitation Program assures your people the best medical care. Everything that *can* be done *is* done to restore injured workers to good health.

In these days of close profit margins and greater risks, these differences are well worth considering. Call your Travelers agent or broker for full details.

The Travelers service for contractors also includes: *Contractors' Bond Service* with speed and know-how. *Contractors' Equipment Floaters* and *Builders' Risk* insurance serviced by a nationwide claim organization that can give you prompt attention anywhere.



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INSURANCE COMPANIES, HARTFORD 15, CONNECTICUT

All forms of business and personal insurance including
Life • Accident • Group • Fire • Marine • Automobile • Casualty • Bonds

Job Talk...

Good Weather Helps Advance Seaway Jobs

Thanks to exceptionally good weather throughout the summer, the St. Lawrence Seaway and Power Project has made big strides forward this year. And chances are good that deadlines will be met in 1958, the year the project goes into business.

On September 1, the American portion of the Seaway was 66.1% complete over-all, based on contract awards valued at $93,000,000 to that date.

The contract for the mainland section of Long Sault Canal is now on schedule. Peter Kiewit—Morrison-Knudsen had excavated a total of about 11,541,000 yd, which included 1,084,000 yd during August. About 800,000 remained.

The Great Lakes Dredge and Dock Company was still plagued with equipment breakdowns in carrying out its contract for dredging the downstream approach to the Grasse River Lock. The 80,800 yd dredged in August brings the total amount dredged to 259,000 yd, with about 1,597,000 remaining.

At both locks, operating machinery installation, earthwork, and miscellaneous construction continue to be the main items of construction activity as concrete placement nears completion.

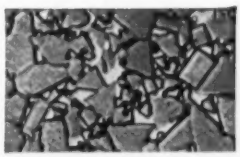
In fact, concrete placement at Grasse River Lock was scheduled to be completed before September 15. During the month 28,800 yd of concrete were placed, bringing the total to about 468,000. Earthwork operations continued, with about 2,791,000 cu yd of material excavated to date, which includes 398,000 cu yd for August. About 1,307,000 cu yd remain.

At Eisenhower Lock concrete placement is scheduled for completion this month, with about 20,000 cu yd remaining. The total in place to date amounts to some 486,000 cu yd, which includes 35,400 cu yd placed in August.

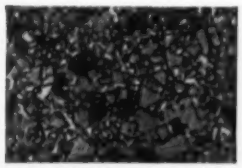
The government dredge Gaillard, working in Section A of the South Channel, dredged about 35,000 yd of till, boulders, and gravel during August. The Gail-

continued on page 20

Longer bit life—with *new* Sandvik Coromant X-Bits



Sandvik Coromant Tungsten Carbide. (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities—therefore stronger, longer-lived.



Low quality Tungsten Carbide. (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give you more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used—as shown in the microphotos above. This means less wear, longer life and a better job.

2 the bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 the bigger Sandvik Coromant bits are all of X-design, which prevents rifling.

No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

THESE STANDARD SIZES ARE AVAILABLE		
	THREAD	DIAMETERS AVAILABLE (IN INCHES)
SHOULDER TYPE	7/8" F	1 1/2
	1" H	1 1/2, 1 5/8, 1 3/4 and 1 7/8
	1 3/16" D	2, 2 1/8, 2 1/4, 2 3/8, 2 1/2, 2 3/4 and 3
	1 1/16" K	3, 3 1/2, 4 and 4 1/2
BOTTOMING TYPE	1 1/4" Rope	1 7/8, 2, 2 1/4, 2 1/2, 2 3/4 and 3
	2" Rope	3 1/2, 4, 4 1/2 and 5
	400	2, 2 1/4 and 2 1/2
	600	2 1/2, 2 3/4, 3 and 3 1/2

The sizes underlined are X-shaped bits

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels—the most widely used in the world—cross bits from 1 1/2" to 2 1/2" and extension steel equipment.

Write, phone or cable today for further details to any of the addresses below:

Atlas Copco

EASTERN — *P.O. Box 2568 Paterson 25, N.J. Phone — Armory 4-3310*
PACIFIC — *930 Brittan Avenue, San Carlos, Calif. Phone — Lytell 1-0375*
CANADA — *Montreal Airport, Quebec. Phone — Melrose 1-1871*
MEXICO — *Apartado Postal 56, Torreon, Coahuila. Phone — 39-07*

DST-78

Proved ways to boost output with an All-New Bucyrus-Erie Bucket

By providing better all-round performance, an *All-New* Bucyrus-Erie bucket on your dragline provides bigger output plus long-life dependability.

Fast Loading is possible because of the accurate balance designed into the bucket. Proper distribution of bucket weight helps teeth, cutting edge and the thin "slicing action" lip penetrate rapidly. Tapered basket also helps load fast and full.

Smooth Carrying results from proper flaring and balance of bucket. Bobbing and spilling is minimized.

Rapid Dumping is assured by the smooth inside design of the bucket and the high arch.

Durability is provided through use of BECOLOY, a tough fibrous alloy which has high impact resistance even at low temperatures, is readily weldable and is magnetic. It can be cut with an acetylene torch for fast field maintenance.

New design Bucyrus-Erie buckets are available in a wide range of sizes, with solid or perforated baskets for light, medium or heavy duty. Let your Bucyrus-Erie distributor recommend the right one for your requirements.

35R57

BL - LIGHT
BM - MEDIUM
BH - HEAVY

Familiar Sign
at the Scene of Progress

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

MODEL M-G Small, for light construction. 29" dia. Combination floating-finishing trowels. Gas. (M-E, Elec.)

MODEL JA-G Medium machine for general use. 34" dia. Float trowels snap on. Largest selling model. Gas.

MODEL JA-E One of the four electric models. 34" dia. For average size jobs. Snap-on trowels for floating.

MODEL JA-4G For average jobs. Four trowel design. 34" dia. Combination trowels. Fixed ring. Gas. (JA-4E, Elec.)

CHECK

the

Whiteman

FINISHER

that's best for you!

MODEL BA-G For finishing large areas. 44" dia. Snap-on trowels for floating. Gas. (BA-E, Electric.)

MODEL SF-A Disc float, for patented method floors. 24" cast iron disc. (SC-A convertible to floating-finishing)

No matter how much or how little concrete finishing you do, there's a Whiteman Finisher that's perfect for your needs. Each of the 13 models incorporate exclusive Whiteman features and rugged construction, the results of 18 years of sound engineering and quality manufacturing. And each is designed to do the job faster, better and cheaper—to save time and money—to increase profits for you. Call your Whiteman distributor for details today!

More Whiteman Finishers are in use than <u>all</u> other makes combined!

MODEL CA-4G Big, heavy-duty machine for large areas. 46" dia. 4 combination trowels. Fixed ring. (C-42, 42" dia.)

MODEL TW Twin, for extra-large areas. Finishes 5' width. Does work of two machines. No torque. Comb. trowels.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

SCREEDING MACHINES

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TRUCK MIXERS

POWER BUGGIES

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IT'S YOUR MOVE!

WHITEMAN MANUFACTURING CO. Dept. C
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Please send prices, catalogs and name of distributor for
☐ Power Buggies ☐ Screeding Machines ☐ Vibrators
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You can't set your sights too high

For digging . . . for handling material . . . for any clamshell work — OWEN Buckets perform giant size jobs day in and day out. OWEN'S designing and engineering experience, gained through 50 years of manufacturing Clamshell Buckets exclusively, has developed a product that is guaranteed to out-perform any other make. Remember—the bucket is the working end of the boom and it is of the utmost importance that there is absolute assurance the bucket will do the job.

This experienced "know-how" in design and engineering has contributed to the origination of the only independent tine action Grapple to handle rock, scrap metal or pulpwood. The same unequaled quality construction in OWEN Clamshell Buckets is in OWEN Grapples.

OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T".

The OWEN BUCKET Co.

BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

JOB TALK . . .
continued

lard has dredged 68,000 yd to date.

In Section C of the South Channel, S. J. Groves and Sons had an exceedingly good month and has now removed some equipment from the cut. Jack and Jim Maser have virtually completed their subcontract for scraper excavation. It is expected that all work inside the rim dike will be completed soon. During the month about 446,000 yd were excavated from this area. Blasting was used to loosen some of this material. The total excavation to date amounts to 1,320,000 yd, leaving about 480,000 to be excavated.

Working in Section D of the South Channel, Merritt-Chapman and Scott made satisfactory progress with the dredge Sullivan. About 64,000 cubic yards of glacial till and boulders were dredged, bringing the total to 183,000, with 277,000 remaining. The removal of the sunken bridge span, which is a part of the Section D contract, is now under way.

Power Projects

On New York Power Authority projects, August was highlighted by the completion of concreting operations at Iroquois Dam, marking the near completion of one of the major features of the St. Lawrence Power Project. Concrete placement for all project structures now exceeds 1,590,000 yd or 77% of the total requirement. Excavation exceeds 45,000,000 yd. Employment averaged 6,630 for the month.

Concrete placement at the St. Lawrence Power Dam continues on schedule, and 65,000 yd were placed, bringing the total to date to 766,000 yd, or 79% of the required total.

At Long Sault Dam, concrete placement is continuing at a rapid pace as 81,000 yd were placed during the month, bringing the total to date to 422,000 yd. Rock excavation for Stage 2 spillway apron was completed.

Concreting operations for Stage 2 construction at Massena Intake continued concurrently with backfilling of the upstream and downstream sides of the structure. Concrete placed to date totals 192,000 yd or 99% of the required total.

continued on page 26

A special interview

How ABRASIVE SAND problem was solved by rubber-tired tractor

You've probably seen the damage sand can do to your equipment . . . grinding away at exposed parts of earthmoving units. One machine — rubber-tired Tournatractor® — resists abrasion so well, however, that it's now the standard tractor in many sand areas. If, in your dirt-moving, your tractors frequently work in sand, or other abrasive materials, read what a sandpit superintendent — Ira Kent, Aubuchon Silica Mining Division of Portage-Manley Sand Co. at Festus, Mo. — has to say.

Q. *"Mr. Kent, why did you choose Tournatractor?"*

A. "There's a lot of sharp silica sand around here, and much of our work is on rocky surfaces. When we used crawlers, we had a major problem in track maintenance. Our sand in those tracks worked just like a grinding compound. We had continuous pad and roller trouble. So we bought a Model C-2 Tournatractor in 1950, and liked it so much we bought our present improved Tournatractor in '52."

Q. *"What sort of work does your Tournatractor do?"*

A. "We use it for just about everything. Its main jobs are stripping overburden and cleaning up around our shovels. It also builds and maintains haul roads, takes out trees, pulls heavy equipment, and does a lot of clean-up after blasting. Actually, we've found that we don't have *any* tractor jobs that our Tournatractor can't do."

Q. *". . . and what has the maintenance record been, Mr. Kent?"*

A. ***"Well, we've worked our Tournatractor 45 hours a week for almost 5 years, without any real trouble. Our one and only major repair expense in all that time has been replacement of the torque-converter oil-seal and bearings. We've never done anything to the engine . . . not even replacing an injector or anything. We never broke an axle, chipped a gear, or had a single major thing go wrong."***

Q. *"What about the electrical system and its maintenance?"*

A. "We like this electric control system . . . and it's never given us any trouble. In all this time, we have put in only one set of discs in the motor brakes, and two little switches. But that's it, so far as repairs are concerned."

Q. *"And the tires?"*

A. "Our present Tournatractor front tires are still the originals. We replaced the two back ones last spring, after better than 4 years of service. We've never had a blow-out, on any of the four. As to changing or repairing tires — you know that on Tournatractor, changing a tire is as easy as changing an 8.25 truck tire. That's another thing we like about this dozer. Lots easier than fixing track troubles."

Tournatractor's wide, low-pressure tires flex easily over sharp rocks without cutting . . . end age-old problem of rocks, sand, and dust clogging up track assembly.

One of many spare-time jobs handled by Tournatractor is building new haul road. Operator takes overburden dirt, drifts it on down to bottom, building up road grade.

Pit Mgr. Kent says: "Main reason we like our rubber-tired Tournatractor is its go-anywhere ability. It's quick on its feet . . . handles easier . . . maneuvers easier."

This owner-verified work report indicates how Tournatractor can solve your costly abrasion problem. Rolling on big rubber tires . . . with all parts sealed and protected against damage by rocks, sand, and other harmful materials . . . it gives you years of low-cost, trouble-free service. See your nearby LeTourneau-Westinghouse Distributor for full details and a working demonstration.

CT-1501-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Rowe Construction Co., Bloomington, Illinois, uses the Model 374 Conveyor, one of many types and sizes of Barber-Greene portables.

The president of Rowe Construction Co. reports

"Our next portable conveyor will be another Barber-Greene"

"We have given our Barber-Greene conveyor four years of hard service and its performance has been tops. We produce sand and gravel for highway departments and for our own use. So we move our plant three and four times a year. Towing our conveyor from job to job presents no problem at all. We just hitch it up to a truck and move out.

"And it was no big job to lengthen our conveyor from 51 to 60 feet. All we did was order a nine-foot intermediate section and bolt it into place. All carriers, returns and decking were already in place and aligned.

"With this kind of reliability and easy flexibility, we feel sure our next portable conveyor will be a Barber-Greene."

Straight-forward reports like D. H. Rowe's provide the proof of the superior performance and widespread acceptance of Barber-Greene conveyors. Handling coal, sand, gravel and other bulk materials, these versatile conveyors operate on a virtually automatic basis . . . cut labor costs substantially.

Not just portability, but road-ability is one of the many features that save time and money for the Rowe Construction Co.

Literature shows the many superior features of Barber-Greene portables. Write for your copy. 56-21-PO

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Ideal for work in close quarters on housing project

The city of Calgary, Alberta, is building a system of city lanes (alleys) in an area of new homes on the west side of the city. To handle the necessary earthmoving, the city rented two D Tournapulls — one from A. Baldwin, the other from Jefferies and Sons Ltd. Tournapulls worked under the supervision of the City Engineering Department.

Build "T" shaped lanes

On the day photographs were taken, each Tournapull was building a "T" shaped lane (alley). Tournapulls self-loaded up to 5 pay-yards of gravel and sandy silt — working either across top of "T", or up stem. When excavating up stem, "D" starts cut toward lane intersection . . . continues to load right up to, during, and after making 90° turn . . . completes right-angle cut on lane across top of "T". Continuous loading reduces cycle time . . . moves more yards per hour . . . completes job sooner.

Low land brought up to housing grades

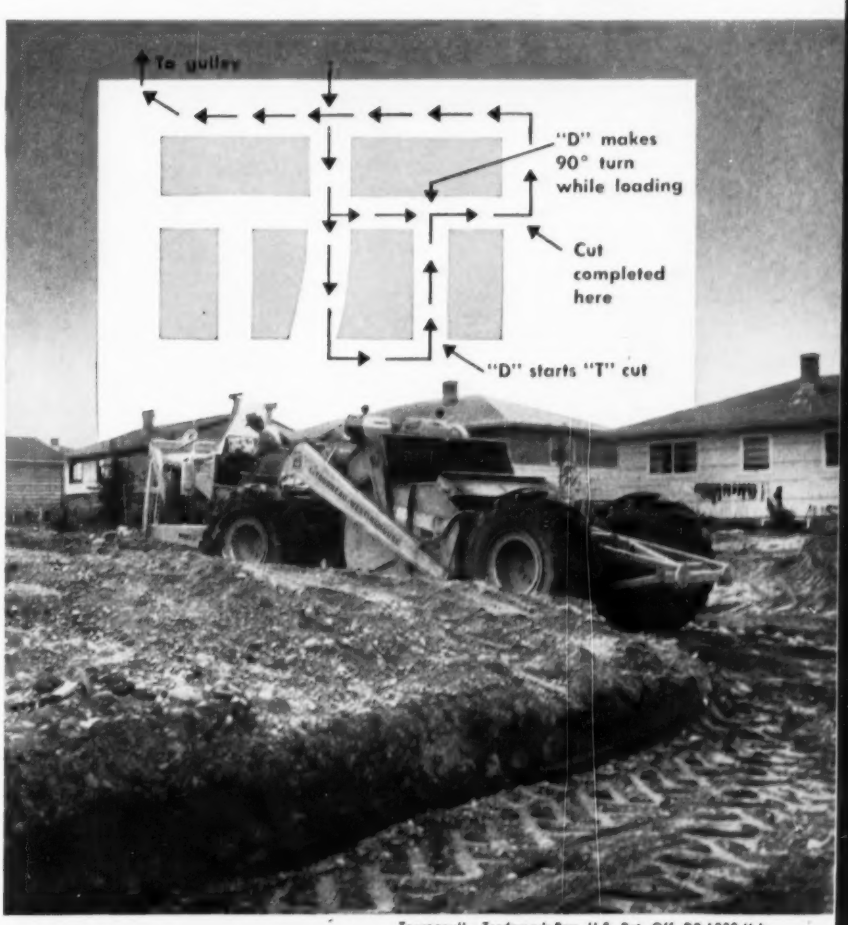
Tournapulls hauled material to nearby gulley, where it was spread to bring up lowland to housing grades. "The 'D' is ideal for this kind of work," says operator Neil Lauchlin. "You can really maneuver around these tight spots. It's good and fast, too!"

Turns 180° in 24'3"

Tournapull's positive electric kingpin power steer enables rig to turn around non-stop in an area only 24'3" wide . . . less than its own length. Rig can work in tight quarters and between buildings where other units cannot readily maneuver. "D's" eliminate time normally wasted shuttling back and forth to turn in restricted areas. No special turn-around areas need be excavated. Fast maneuvering Tournapull swings into cut position quickly. If pusher is used, it need not sit idle while scraper operator wastes time on a wide sweeping turn, and then on long, slow back-in.

Investigate today

Check the new improved D Tournapull. Find out what its short turn radius and high speeds can do for *you*. New "D" now gives you 9 cu. yds. heaped capacity. With 8' wide road clearance and axle-load within 9-ton limit, rig can be roaded almost anywhere without special permit. Send for complete details.



Loading in restricted quarters, D Tournapull negotiates sharp 90° loading turn — self-loads up to 5 pay-yards of gravel and sandy silt, grading for Alberta City lanes. Electric motors accurately control scraper blade, apron and tailgate as well as kingpin steer.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-1230-H-b

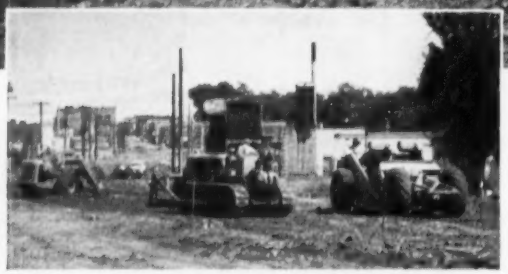
LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

"Phillips 66 Lubrication Engineers are Johnny-on-the-spot to keep our equipment fully productive"

—Lee McLean, Jr., President
McLean Construction Company
Springfield, Missouri



McLean equipment grading and widening new Commercial Street Trafficway in Springfield.

20,000 yards of earth were moved in grading and preparation of modern, new trafficway.

"WHENEVER WE'VE NEEDED HELP on knotty maintenance problems, Phillips *66* lubrication engineers have been prompt with valuable technical assistance," says Lee McLean, Jr. "We value this help so highly that, for the past three years, we have been an exclusive Phillips *66* customer."

McLean Construction Company specializes in earth moving, highway construction, plant site preparation and municipal work. It operates more than 60 pieces of equipment.

Phillips *66* lubrication engineers can help you with your maintenance problems, too. Phone, write or wire today and we'll have one of our division men on the way. Sales Department, Phillips Petroleum Company, Bartlesville, Okla.

PHILLIPS 66 HEAVY DUTY MOTOR OILS

Phillips 66

Remember:
IT'S PERFORMANCE THAT COUNTS!

60 hp Adams 220 grader "takes-over" lighter tasks, releases big graders for heavy work. Contractor John G. Yerington, Benton Harbor, Mich., saves 20% to 50% machine-cost . . . operating expense is lower.

60 hp grader cuts costs on Michigan road-work

Much of the road construction and blacktopping in counties and townships around Benton Harbor, Michigan, is handled by John G. Yerington, a road contractor. His organization can handle complete jobs—dirtmoving to final surfacing.

Mr. Yerington was aware that on some of his projects, the full work-potential of his standard-size graders was not fully utilized. He felt that a good lighter-weight machine could handle a number of general grading tasks at lower cost.

15,500-lb. Model 220 frees heavier graders

To reduce grading cost—especially final road surfacing and dressing—Mr. Yerington bought a 60 hp Adams* 220. This smallest-size grader now handles his lighter work . . . frees higher-powered machines for heavy construction.

For example, "226" saves big-grader time on clean-up of old roadways before blacktopping. This Adams grader does the complete preparation job. It has plenty of power to grade-off dirt and accumulated refuse . . . to scarify high "crowns", smooth surface, spread gravel . . . to clean ditches, shape and level shoulders and cut backslopes. It will do the same jobs as the big Adams graders within its power and weight range. For not-so-heavy work, operation of "220" is less costly, too, because machine expense is 20-50% less . . . operating costs lower than on larger machines.

Yerington's "220" smooths roadways, cleans ditches, shapes shoulders, handles light general grading on contracts for reconstruction of county and township roads around Benton Harbor, Michigan.

A lot of grader for the money

A top producer for its size, "220" gives you full-measure of work power from its 60 hp diesel engine. Grader works at 10 full-power speeds . . . leads its class with 5 forward, 1 reverse and 4 optional creeper gears. Sturdy 4-wheel tandem-drive provides plenty of push-power.

As on larger machines, smooth-operating controls actuate 10′ slide-shift moldboard to all normal positions, without operator's leaving the cab. Leaning front wheels offset side-thrust . . . make short turns. Rugged one-piece arched frame and strong blade mechanism withstand punishing shocks. Anti-friction steering, hydraulic brakes, afford safe, easy control. Scarifier, power-shift moldboard, cab, and other accessories available as optional equipment.

Let us help you reduce costs

Ask us to review your equipment needs, as related to your contracts and prospects. Call or write for information on "220" — or on any other Adams grader: 190, 150, 123, 115, 80 hp. *Trademark G-1324-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

GOODALL *Waterproof*
CLOTHING • FOOTWEAR

Tops . . . in Protection, Comfort, Long Wear!

COATS • JACKETS • OVERALLS

Durable, full-cut garments, in rubber, oiled and latex constructions, for every kind of wet-weather work. Made of selected materials, with exacting craftsmanship, they are guaranteed waterproof, assuring complete protection from the elements. Reinforced where extra strength is needed, without impairing comfort and full freedom of movement. Available in a variety of styles, in all sizes. No. 338 Coat is an old-time favorite—double back; corduroy-lined collar; 49" long.

SUITS—Style 80 Jacket with Style 81 Overalls makes the ideal shaft suit. Other jacket-and-overall suit combinations to meet every preference or job requirement.

SAFETY HATS

"Hardboiled" Safety Hats in fibreglass or aluminum. Light weight and comfortable, yet providing greatest possible head protection. Exceed highest established requirements for strength, heat and moisture resistance, and dielectric tests.

"TOE-SAVER"® BOOTS

Smooth, tough, flexible black rubber, heavy duck lined Cushion Insole. White cap over reinforced steel safety toe tested to withstand 2,000 lbs. pressure. Tiretread soles. Hip, Storm King and Short. *All permanently marked size numbers.*

The "Toe-Saver" feature is also available on a variety of work shoes, and on our "Contractors" Mucker Boot.

"If it's GOODALL, it MUST be Good!"

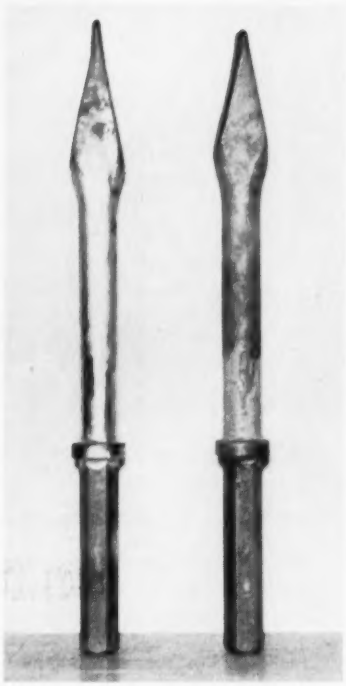
Contact Our Nearest Branch for Details and Prices

Standard of Quality—Since 1870 HOSE • BELTING • FOOTWEAR • CLOTHING AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches and Distributors Throughout the United States and in Canada

JOB TALK . . .
continued



Chrome Plating Extends Life of Cutting Edge

A new chrome plating process developed by Tearco Corp. of Clark, N.J. may be the answer to longer life for cutting tools. The company reports that tests made by H. L. Harrison & Son, New Jersey contractor, showed that a processed steel wedge point of a paving breaker was still in good condition after 40 hr. Whereas, unprocessed points on the same job had to be removed and resharpened.

Contractor Erects Bleachers For Sidewalk Watchers

Grandstand play for sidewalk superintendents' approval was made by San Francisco contractor, Haas & Haynie Corp., with the opening of a 100-seat bleachers as "club house" for officially established San Francisco Sidewalk Superintendents Club. The move also was deft public relations play for neighbor tolerance of pile driving noise. The project is the 20-story $10,000,000 Crown Zellerbach Building. Some 2,000 charter members were named on the first day before H&H ran out of membership cards.

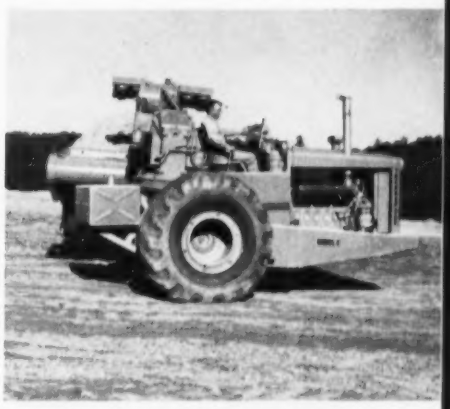
Do these equipment SLOWDOWNS eat up your profits?

time lost on turns

wheel spin in soft footing

hard, slow loading

*Here's how C Fullpak*can help you*



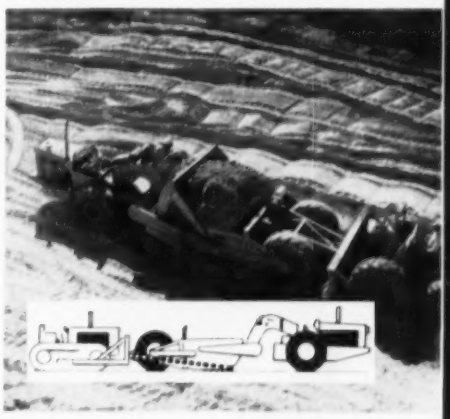
Electric kingpin power-steer, continuous 180° turn in 32'7", cut cycle time

The famed wagon-steer maneuverability of this 210 hp C Tournapull® with Fullpak scraper reduces slowdowns in restricted cuts and fills. LeTourneau-Westinghouse Fullpak makes continuous 180° turn in a space only 32'7" wide. No special turn-around areas need be excavated. Fast-maneuvering Tournapull positions for cut quickly.

Electric-control Tournapull turns left or right instantly — in any footing, at any speed — with just a flick of the dashboard steering switch. Kingpin power-steer also permits operator to swing prime-mover from side-to-side *electrically*, to "walk" unit out of soft going.

Power-transfer differential cuts slowdowns in sand, mud and loose materials

With Fullpak, you need not bypass the mud, sand, and tough going that bog down ordinary rigs. Tournapull prime-mover has an exclusive power-transfer differential that automatically slows spinning wheel and transfers up to 4 times the power to wheel on firmest footing. Wheelspin — with its resulting tire wear — is minimized. You get steady traction in all working conditions — for more profitable hauls.



Faster, easier, loading with low, wide bowl of 18-yd. C Fullpak

You eliminate costly slow-loading with Fullpak's better-designed "low and wide" bowl. Bowl bottom has only 2° rise when loading. With dirt flow almost horizontal . . . and with curved top on tailgate to roll material up and forward into a high heap . . . 18-yd. Fullpak packs full-capacity, low-void payloads fast!

Push-block is positioned low, to match height of tractor push-plates. Power thrust is carried in direct line from pusher to blade, to further increase speed and ease of handling. Fullpak's high apron lift (6'1") permits easy loading or unloading of chunky materials.

To avoid frequent slowdowns . . . and to insure a better profit margin on your operations, investigate the fast-loading, high-production C Fullpak. Ask for complete details.

*Trademark CP-1619-DC-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

FULLER ROADRANGER® Transmission standard in new LeT-WesCo truck

Fuller's 9-speed R-1150 ROADRANGER Transmission was selected for the revolutionary new 30-ton LeTourneau-Westinghouse off-road hauler "... because of the wide range of gear selection and speeds, plus the fact that it shifts easily and quickly."

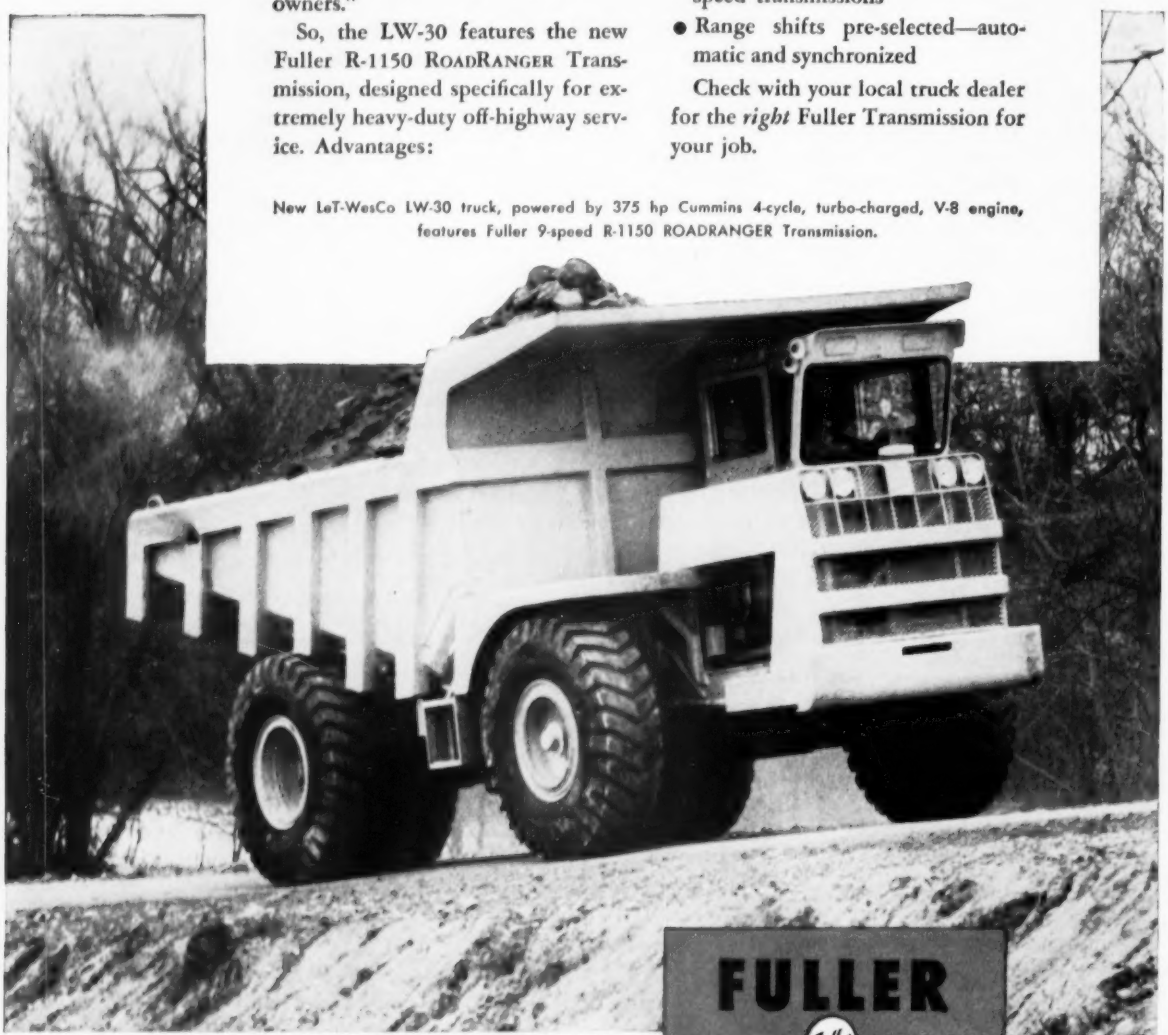
Merle R. Yontz, President, says: "We wanted a tough, fast, high-production hauler which would be cheaper to run, simpler to maintain, and easier to operate—one that would make more money per trip for its owners."

So, the LW-30 features the new Fuller R-1150 ROADRANGER Transmission, designed specifically for extremely heavy-duty off-highway service. Advantages:

- No gear splitting—9 selective gear ratios are evenly and progressively spaced
- Pre-selective countershaft brake for easier, quicker shifts
- Average 38% between ratios
- One shift lever controls all 9 forward and 2 reverse speeds
- Engines operate in peak hp range with greater fuel economy
- Less driver fatigue—1/3 less shifting than with comparable multi-speed transmissions
- Range shifts pre-selected—automatic and synchronized

Check with your local truck dealer for the *right* Fuller Transmission for your job.

New LeT-WesCo LW-30 truck, powered by 375 hp Cummins 4-cycle, turbo-charged, V-8 engine, features Fuller 9-speed R-1150 ROADRANGER Transmission.



FULLER

TRANSMISSIONS

FULLER MANUFACTURING COMPANY, Transmission Division, Kalamazoo, Michigan • Unit Drop Forge Division, Milwaukee 1, Wisconsin • Shuler Axle Company, Louisville, Kentucky (Subsidiary) • Sales & Service, All Products, Western District Branch, Oakland 6, California and Southwest District Office, Tulsa 3, Oklahoma.

Here's tandem push-power in one easy-to-spot machine handled by one operator

Big B Tournapull, with 27-yd. Fullpak* scraper, picks up heaping load *fast* with Twin-C pushing. New tandem-engine pusher provides enormous power, plus speed to match rubber-tired scrapers. Owner benefits from economies of one-machine operation.

Big push-plate of Twin-C is raised and lowered by electric control. Operator can center plate on scraper push-block, to assure solid contact at all times. Once push starts, plate "floats" . . . automatically adjusts to match movements of scraper push-block.

Since the trend in earthmoving today is to bigger-yardage contracts, you are using more and more of the larger-size scrapers . . . machines of 18 to 27-cu. yd. capacity. To push-load these giants efficiently, contractors are finding it necessary to double-head their crawler pushers.

While this practice produces extra drawbar pull, it seldom proves practical. First, there is the problem of synchronizing the actions of 2 operators and 2 machines. Time is lost in positioning, and tandem crawler teams cannot effectively match the speed of rubber-tired scrapers. Finally, there's the added expense of operating the extra machine, with its extra operator.

LeTourneau-Westinghouse, alone in the earthmoving field, offers a unit that solves these problems. The job-proved Twin-C* pusher provides: a) synchronized tandem push-power, b) a speed range to match rubber-tired scrapers, c) single-unit ease in positioning, and, d) economy of one-machine, one-man operation.

Proven drawbar pull of up to 64,500 lbs.

Twin-C provides the combined horsepower output of two 210 hp GM diesels on one machine. With its 40 tons of tractive weight, its tires over 7′ high and 2½′ wide, this machine develops 64,500 lbs. of drawbar pull.

Consider, also, Twin-C's many additional advantages, besides its tandem power (a "first" in the rubber-tired pusher class). This pusher can develop speeds up to 20 mph forward, 5.8 in reverse. Air brakes on all 4 wheels provide 3,690 sq. in. of braking surface, for quick stops and fast maneuvering.

Positive, Tournapull®-type steer

There's new steering ease, too, with the Twin-C. Operator makes short turns in tight quarters, because positive power-steer is applied through geared kingpin at base of yoke. It's the proven LeTourneau-Westinghouse steering principle used successfully on Tournapull-Scrapers all over the world. Front and rear sections line up automatically when steering power is shut off.

Power-lift on push-plate

Twin-C's big, electric-controlled push-plate is easily raised or lowered by operator to make on-center connection with every push-block. Once push starts, plate "floats" . . . automatically keeps contact with scraper until bowl is filled.

If tandem pushing is becoming the accepted practice on your spreads, find out more about the new Twin-C. Call or write for full specifications on this powerful pusher.

*Trademark TW-1133-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

New giant tire service,

SEVEN NEW STRATEGICALLY LOCATED FACTORY RECAPPING SHOPS FOR FAST GIANT TIRE SERVICE AROUND THE CLOCK

These seven centers plus existing General Dealer facilities assure off-the-road contractors of on-the-job service second to none!

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builders of exclusive NYGEN® TRUCK TIRES

To assure peak on-the-job performance, General Tire and its dealers now offer "giant tire" users a complete and far-reaching network of service, recapping and repair stations from coast to coast. No matter what or where the job, be it construction, mining, quarrying or logging, deadline-pressured contractors can be sure of prompt, efficient, around-the-clock service from General, makers of exclusive NYGEN truck tires.

Specify Generals on your new equipment

THE GENERAL TIRE & RUBBER COMPANY
AKRON, OHIO

Start to go at 40 below... *FAST!*

SINCLAIR LEADS THE WAY IN SOLVING COLD WEATHER STARTING PROBLEMS

Now there's no longer any need to lose time, man-hours and money due to faulty cold weather starting. Sinclair has what you need to get going – in a hurry!

SINCLAIR STARTING FLUID permits trigger-quick ignition and smoother sustained burning, eliminates the possibility of detonation.

AMPCO-SINCLAIR ENGINE STARTER eliminates the need for "operator know-how"– *automatically* injects the right amount of starting fluid at the right rate of fluid flow for any engine, regardless of design, size or temperature.

ON-THE-JOB ENGINEERING SERVICE: Trained, experienced Sinclair engineers are ready to help you at all times keep your equipment working on the job.

HIGH-QUALITY FUELS AND LUBRICANTS: For easy starting and full anti-wear protection under sub-freezing conditions, you can depend on Sinclair quality products such as – H-C Gasoline, Diesel Fuels, TENOL® Motor Oils, LITHOLINE® Multi-Purpose Grease and OPALINE® Multi-Purpose Gear Lube.

Talk it over now with your Sinclair Representative, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR

Integral Flow Control Now Available In Larger Volume Vickers Vane Pumps

For power steering of vehicles with very heavy front axle loading

Assures Optimum Steering ... Simplifies and Reduces Cost of Installation

Flow control in hydraulic power steering circuits is necessary because power steering pumps vary in volume delivery according to engine speed. To assure adequate steering power while maneuvering in tight places, the pump must be chosen to provide ample volume at engine idle speed. The much greater flow at high speed, if not controlled, results in unsatisfactory and sometimes unstable steering performance. Further disadvantage is undue heating of the hydraulic fluid.

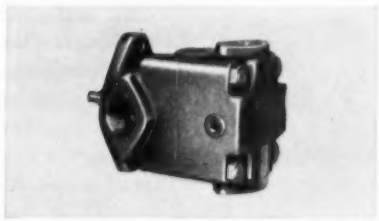

FIG. 1—Vickers Series V200 Vane Pump with integral flow control and relief valve. Available in 3 sizes with nominal rated capacities of 5, 8 and 11 gpm.* Controlled flow rates of all sizes are 2, 4, 6 and 7 gpm at relief valve setting of 750 or 1000 psi.

***Rating at 1200 rpm.**

An integral flow control valve for limiting flow to the steering device has always been a feature of the small Vickers Vane Type Pumps used in passenger car steering. Excess fluid resulting from higher engine speeds is returned to the reservoir with minimum pressure loss and very little heating. Previously, the larger pumps used for steering heavy vehicles did not have an integral flow control valve. It was installed as a separate unit.

Now Vickers offers larger pumps—the V200 Series—with integral flow control (See Fig. 1), which simplifies and substantially reduces the cost of installation. Smaller hydraulic lines to the steering booster are made possible by limiting flow in this part of the circuit.

For applications requiring two

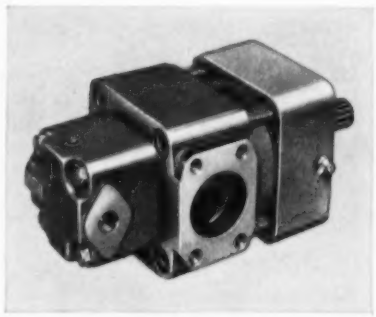

FIG. 2—Vickers Double Pump for operating two independent hydraulic circuits from one power source. Series V2200, V3200 and V4200 are available with the smaller pump (Series V200) having integ.al flow control for power steering.

separate hydraulic circuits, the Vickers line now includes three new series of double pumps (See Fig. 2). Integral flow control is furnished in the small-volume section used for power steering. The large-volume section, in conjunction with Vickers multiple unit valves is used for operating the vehicle's tools.

Both the single and double pumps with integral flow control have all the features and characteristics responsible for the outstanding popularity of Vickers Vane Type Pumps. Higher efficiency means more work from less power. Hydraulic balance eliminates pressure induced bearing

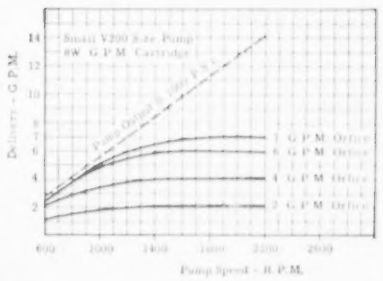

FIG. 3—Typical performance curves of Vickers V200 Pump with Integral Flow Control and 8 gpm cartridge. Delivery rises quickly with speed and then holds at controlled flow rate setting.

loads, provides longer life and reduced maintenance. Automatic wear compensation maintains "new-pump" efficiency throughout a very long life. Starting in cold weather is easier.

More Vickers designed pumps than all other makes combined are used for hydraulic power steering. Ask for new installation drawings M192680, M192856, M192857, M192858 and #1617-S.

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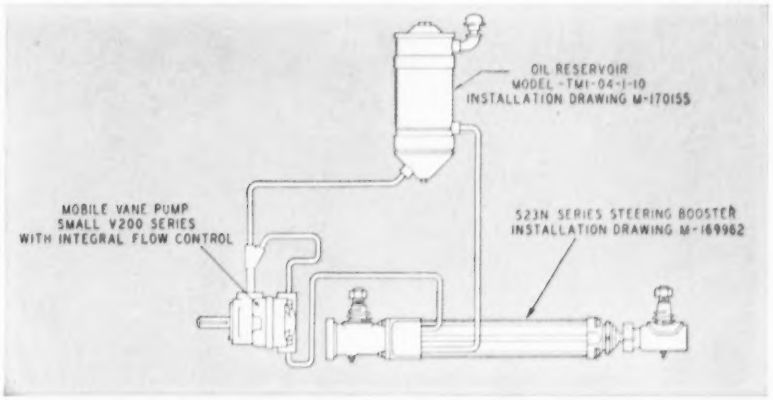

FIG. 4—Preferred circuit when using Vickers Series V200 Vane Pump with integral flow control and Vickers S23N Hydraulic Power Steering Booster. This model is without relief valve because the pump contains such a valve.

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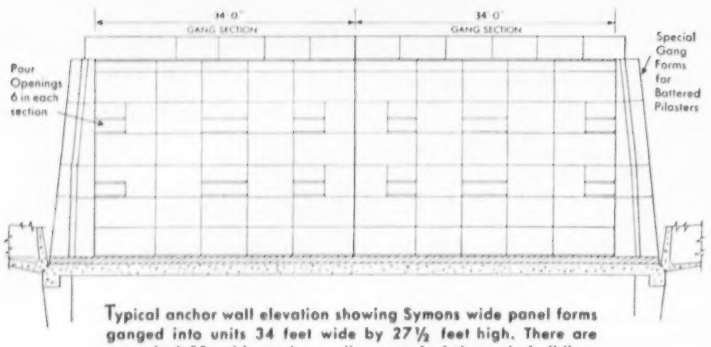
(Advertisement)

Symons Forms Ganged for Anchor Walls



Typical anchor wall elevation showing Symons wide panel forms ganged into units 34 feet wide by 27½ feet high. There are a total of 28 cable anchor walls on roof of the main building.

ASSEMBLY COST ONLY 5c A SQ. FT.

Modern forming methods answer the need of the jet age on the new TWA hangar at New York's International Airport. Symons 4 x 6 and 4 x 8 foot panels ganged in units 34 feet wide by 27½ feet were used for forming the 28 anchorage walls which strandle the full 80 foot roof width of the main building.

By using this method of forming, the contractor, Grove, Shepherd, Wilson & Kruge, Inc., poured the hangar in place at the cost of a precast structure. Panels were assembled on the ground at a cost of only 5¢ a square foot. It took about 15 minutes for a crane to tilt a gang form off the slab and inch it into place on the roof. 15,000 square feet of Symons wide panel forms were used in this gang forming operation. Symons wide panel forms have steel struts and 2 x 4 cross members to strengthen the panel and minimize deflection during pouring. Tie holes in the steel struts allow insertion and removal of special ties. Any strength tie may be used, including Williams removable end ties. Individual panels are built in 6′ and 8′ lengths and 30″, 36″ and 48″ widths.

Project Manager, A. R. Maxwell, working closely with the local Symons forming engineer, devised this fast, efficient method of forming. This type service is available to all contractors, as well as the preparation from your plans, complete form layouts, bill of materials and recommendations for the best and least costly method of forming —there's no charge or obligation.

Symons Forms Shores and Column Clamps may be rented with purchase option—rentals to apply on purchase price. For more information on Symons products and service send for our FREE catalog.

Symons

SYMONS CLAMP & MFG. CO.

4255 Diversey Avenue Dept. K-7

Chicago 39, Illinois

Warehouses located in California, Kansas, Minnesota, Pennsylvania and Texas.

Sales offices and agents in principal cities.

Crane-of-all-work

THE ROUSTABOUT—manufactured by the Hughes-Keenan Corporation—is a highly versatile, highly maneuverable motive crane. It has an extremely short turning radius, travels at speeds up to 15 m.p.h. All three crane operations—swinging the boom, raising and lowering the boom, working the hoist line—can be performed simultaneously or independently. All six models (5 ton capacity shown) can be specially equipped for construction work, in-plant or out-plant materials handling. To assure maximum power efficiency and dependability, Roustabout Cranes are powered by big-output, heavy-duty Chrysler Industrial Engines.

CHRYSLER INDUSTRIAL 30

(230 cu. in. displacement) powers the 3, 4, 5, 6 ton models of the Roustabout Crane. (Industrial 32, 265 cu. in. displacement powers 10, 12½ ton models.) Both of these in-line six engines also power many other makes of equipment in the construction and materials handling fields. There are four Chrysler in-line 6s, two V-8s—ranging from 230 to 354 cu. in. displacement.

Chrysler
INDUSTRIAL ENGINES
INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

Write Dept. F10 Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan, or see your nearest Chrysler Industrial Engine Dealer.
☐ For engineering information ☐ For descriptive literature

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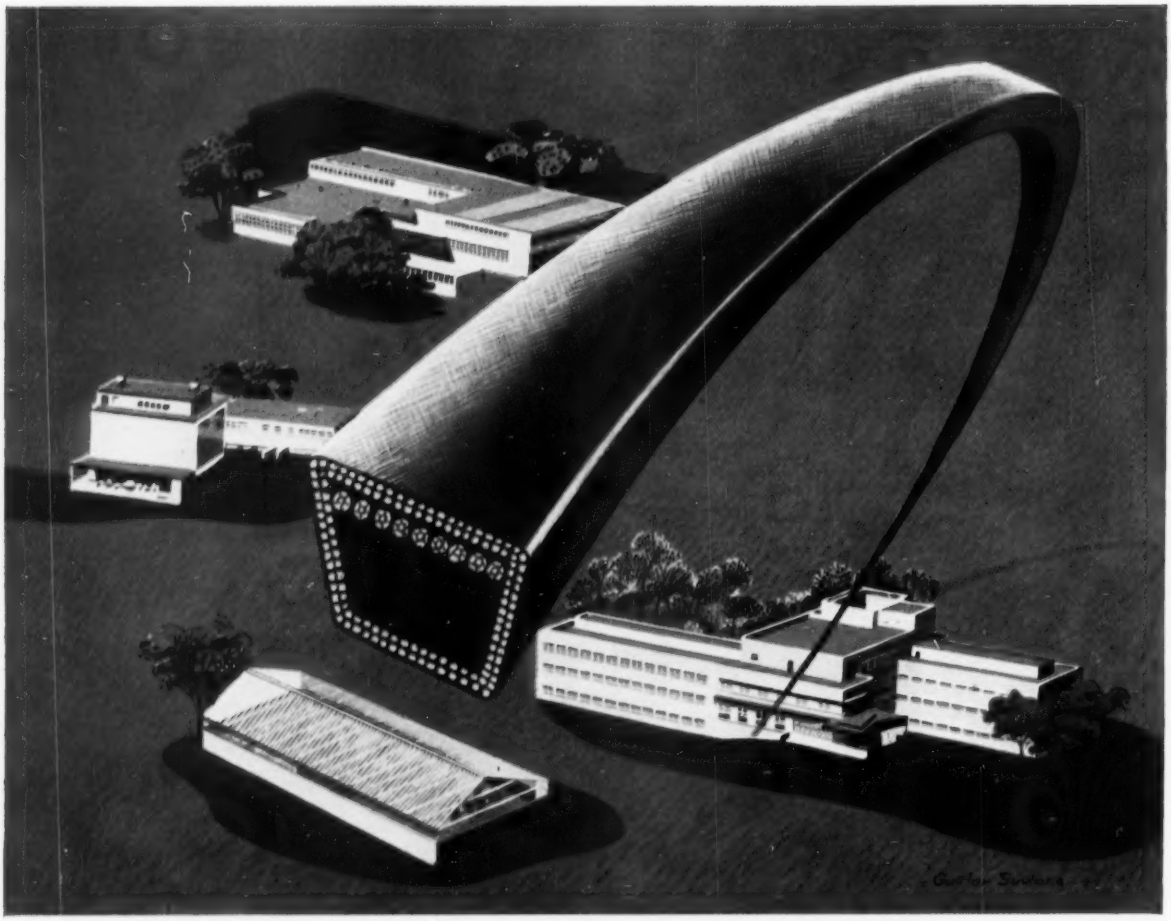
UNITENSION V-BELTS



U.S. RUBBER'S RESEARCH CENTER, Wayne Township, New Jersey

A New Place for Creating and Perfecting...

Since 1846, we have created many things...created the products you need to increase output, cut costs.

We have done our thinking in a lot of places, but we like our newest place best of all.

Our Research Center in Wayne Township, New Jersey, will be the source of the Mechanical Goods that have always been United States Rubber Company's especial pride. The new Center will be staffed by men who work and live in the heritage of those who produced, for example, our Unitension V-Belt.

Every cord in this unique belt is built in by error-proof electronic controls, instead of the commonly-used mechanical means. This guarantees that each cord will pull its full share of the load, thus, belt life is prolonged. This precise control of manufacture results in elimination of vibration. Unitension® V-Belts free you of the problem of matching. They are made by a process that results in a *uniformity* unattainable with any other method. The Unitension belt is but one of the many developments that germinate in our research staff. Their aim is to make things *better*.

The unparalleled facilities, equipment and convenience of this largest and newest Research Center in the rubber industry constitute a source of inspiration, excitement and greater vision to our scientists and engineers. From them will come rubber goods that will far surpass the performance of today's products and render to industry services never dreamed of before.

Mechanical Goods Division

United States Rubber

See things you never saw before. Visit U. S. Rubber's new Exhibit Hall, Rockefeller Center, N.Y.

Construction Machinery Price Trends

Price Index

	AUGUST 1957	MONTH AGO	YEAR AGO	PERCENT CHANGE 1956-57
All Types of Equipment	161.1	157.9*	149.4	+ 7.8
Cranes, Draglines, Shovels	**160.2**	**160.2***	**149.0**	+ 7.5
Shovel, ½ cu yd	150.9	150.9	142.8	+ 5.7
Shovel, ¾ cu yd	162.9	162.9	154.0	+ 5.8
Shovel, 1-1½ cu yd	172.4	172.4	161.8	+ 6.6
Shovel, 2 cu yd	147.1	147.1*	134.2	+ 9.6
Shovel, 3-3½ cu yd	158.3	158.3	151.3	+ 4.6
Shovel, 6 cu yd	176.5	176.5*	161.2	+ 9.5
Crane, truck mounted	162.1	162.1	153.7	+ 5.5
Bucket, clam shell	152.7	152.7	136.7	+ 11.7
Bucket, dragline	180.8	180.8	165.1	+ 9.5
Crane, tractor mounted	131.7	131.7	120.3	+ 9.5
Scrapers and Graders	**153.5**	**150.1**	**143.6**	+ 6.9
Scraper, 4 Wheel, 8-8.4 cu yd	155.0	155.0	145.2	+ 6.7
Scraper, 4 Wheel, 14.4-15.2 cu yd	151.3	143.9	136.0	+ 11.3
Scraper, 2 wheel	118.4a	113.6a	110.5a	+ 7.1
Grader, heavy duty	159.3	154.9	148.4	+ 7.3
Grader, light & medium	152.2	152.2	145.0	+ 5.0
Tractors	**175.2**	**169.3**	**162.8**	+ 7.6
Wheel type, off-highway	122.1a	118.6a	113.7a	+ 7.4
Crawler type, 37.0-45.1 dhp	177.6	172.3	163.6	+ 8.6
60.5-75.0 dhp	183.4	176.6	168.5	+ 8.8
102.0-116.0 dhp	182.4	172.3	166.2	+ 9.7
126.0-155.0 dhp	183.5	178.3	173.6	+ 5.7
Machinery, Tractor Mounted	**160.2**	**155.8**	**146.6**	+ 9.3
Dozer, cable control	151.6	149.0	149.4	+ 1.5
Dozer, hydraulic control	175.1	170.6	153.9	+ 13.8
Cable, power control unit	147.9	139.9	135.0	+ 9.6
Loader, shovel type	151.3	148.6	139.4	+ 8.5
Specialized Machinery	**144.8**	**144.6**	**135.8**	+ 6.6
Ditcher	151.8	151.8	140.8	+ 7.8
Roller, tandem	181.7	181.7	164.9	+ 10.2
Roller, 3 wheels	154.8	154.8	146.4	+ 5.7
Ripper and rooter	143.3	138.1	132.4	+ 8.2
Dewatering pump, 10 M gph	108.1	108.1	105.4	+ 2.6
Dewatering pump, 90 M gph	133.3	133.3	124.3	+ 7.2
Portable Air Compressors	**156.6**	**146.2**	**133.2**	+ 17.6
Contractors Air Tools	**164.3**	**153.6**	**150.0**	+ 9.5
Mixers, Pavers, Spreaders	**143.1**	**143.1**	**134.5**	+ 6.4
Mixer, port., 11 cu ft	151.7	151.7	145.3	+ 4.4
Mixer, port., 16 cu ft	153.6	153.6	144.8	+ 6.1
Mixer, truck, 4½ cu yd	122.1	122.1	113.7	+ 7.4
Mixer, paving, 34 cu ft	171.2	171.2*	153.7	+ 11.4
Concrete finisher	171.1	171.1	160.0	+ 6.9
Bituminous distributor	115.9	115.9	108.3	+ 7.0
Bituminous spreader	160.3	160.3	149.9	+ 6.9
Bituminous paver	149.8	149.8	143.9	+ 4.1

a Index based on January, 1955 = 100 * Revised
BLS Primary Market Price Indexes, U.S. Department of Labor, 1947149 = 100

Equipment Prices Hit Record High

Construction machinery prices showed many increases between July 15 and August 15. In fact, the Bureau of Labor Statistics Price Index rose 2.0% to a new all-time high of 161.1 on August 15, based on average prices in 1947-49 as 100.

The August increases hit 17 out of the 43 categories of construction machinery. Price hikes were particularly substantial on air compressors, air tools, larger size scrapers, and cable control units for tractors. Increases of from 5% to more than 7% were common for these types of equipment.

Widespread increases appeared in tractor prices. BLS indexes for crawler tractors showed increases ranging between 2.6% and 5.9% over the July 15 price level. Wheel tractors, off-highway type, moved up 3.0%. Hydraulic type dozers increased 2.6% while cable type dozers moved up 1.7%.

Heavy grader prices rose by 3.8% in August, but there was no change reported for light or medium graders. Ripper and rooter prices were up 3.8%.

But some categories of machines held to their July prices in August. Mixers, pavers, bituminous spreaders, and concrete finishing machines were steady. Also unchanged were prices of power cranes and shovels, road rollers, and pumps.

Construction contracts dropped off in September, according to awards reported by Construction Methods. The Contract Award Index fell to 199, based on 1949=100. This was the lowest since August, 1955.

Contractors' orders for new machinery dipped in August after a sharp rise in July. However, September and October orders should hold close to the August rate.

HERE'S ASSURANCE

that your concrete pipe is the strongest possible!

ANY CONCRETE PIPE that is reinforced with welded wire fabric is going to be stronger, more permanent, and easier to maintain than non-reinforced pipe.

BUT TO BE SURE of the *maximum possible* benefits from reinforcement, see that your pipe is reinforced with USS AMERICAN WELDED WIRE FABRIC. American Welded Wire Fabric is precision-made from quality cold-drawn steel wires. The quality of the steel . . . the dependability of the welds . . . the accuracy of wire spacing are all closely controlled to assure you of top performance.

You can get USS American Welded Wire Fabric in the right size and style for any type of sewer or culvert. It comes in circumferential wire sizes up to ½" at 2", 3", and 4" on centers. Write or call for complete information.

REMEMBER, IT PAYS TO ASK

"is it Reinforced"

AMERICAN STEEL & WIRE DIVISION
United States Steel
General Offices: Cleveland, Ohio

Columbia-Geneva Steel Division,
San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division,
Fairfield, Ala., Southern Distributors
United States Steel Export Company, New York

USS

UNITED STATES STEEL

THE CASE OF

THE OWNER WHO THOUGHT AHEAD

ART, THIS CAT* CARE SCHOOL SHOULD PAY OFF WHEN WE START ROLLING NEXT SPRING!

CAT

-AND SPEAKING OF SPRING, I'M GOING TO NEED SOME SERVICE WORK ON MY MACHINES TO BE SURE THEY'RE READY.

NOW'S THE TIME TO THINK OF THAT, TOM!

SUPPOSE WE MAKE UP A SCHEDULE FOR WINTER SERVICING OF YOUR EQUIPMENT. THAT WAY WE'LL GET THE MACHINES BACK ON THE JOB FASTER-MAKING MONEY FOR YOU.

NSON
RUCTION CO.

CATERPILLAR

SWELL! LET'S START WITH MY D6 ON MONDAY. WE'LL BRING IN THE OTHER EQUIPMENT ON A SCHEDULE AFTER THAT.

MONDAY'S FINE! NOW, LET'S MAKE A LIST OF JUST WHAT NEEDS TO BE DONE...

CATERPILLAR*

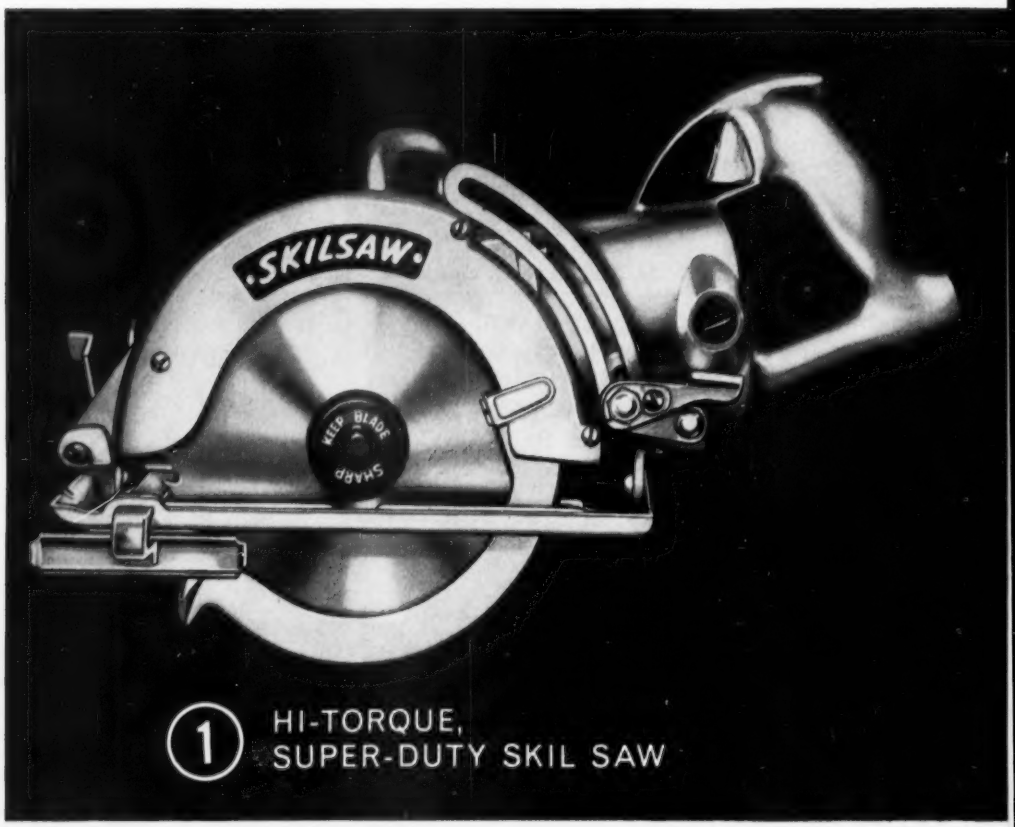
*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

CAT CARE FOR LONGER WEAR

LET ME SCHEDULE YOUR WINTER SERVICE NEEDS FOR YOU!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

which SKIL Saw works



1 The original SKIL Saw—the standard for industry. In-line rear handle and left-hand blade allow you to see line of cut. Exclusive hi-torque worm drive gives exceptional cutting power. Particularly desirable on long rip cuts or on highly resinous woods. Tough to stall anytime. With special blades quickly cuts metals, stone or compositions. Super-duty saws with rear handle design come in eight models from 6½" to 12".

2 The latest and most powerful addition to the SKIL line. Completely new top-handle design for easy "swing-through" cuts. "Floating" blade guard and fast blade-change are exclusive new features. Precise depth adjustments possible with direct reading scales. Only one guide edge needed for either vertical or bevel cuts. A total of 14 special features make this the most exciting new saw on the market today. Top-handle design available in 7¼" and 8¼" models.

3 Designed specifically for all-around use by carpenters or contractors in residential construction. Lightweight. Versatile. Handle positioned for comfortable and balanced handling. All heavy-duty models feature exclusive "Vari-Torque" clutch. Protects against blade kickback. Keeps motor in top running condition. There are four heavy-duty models with blade sizes from 4¼" to 8¼".

best for you?

② NEW HI-SPEED, SUPER-DUTY SKIL SAW

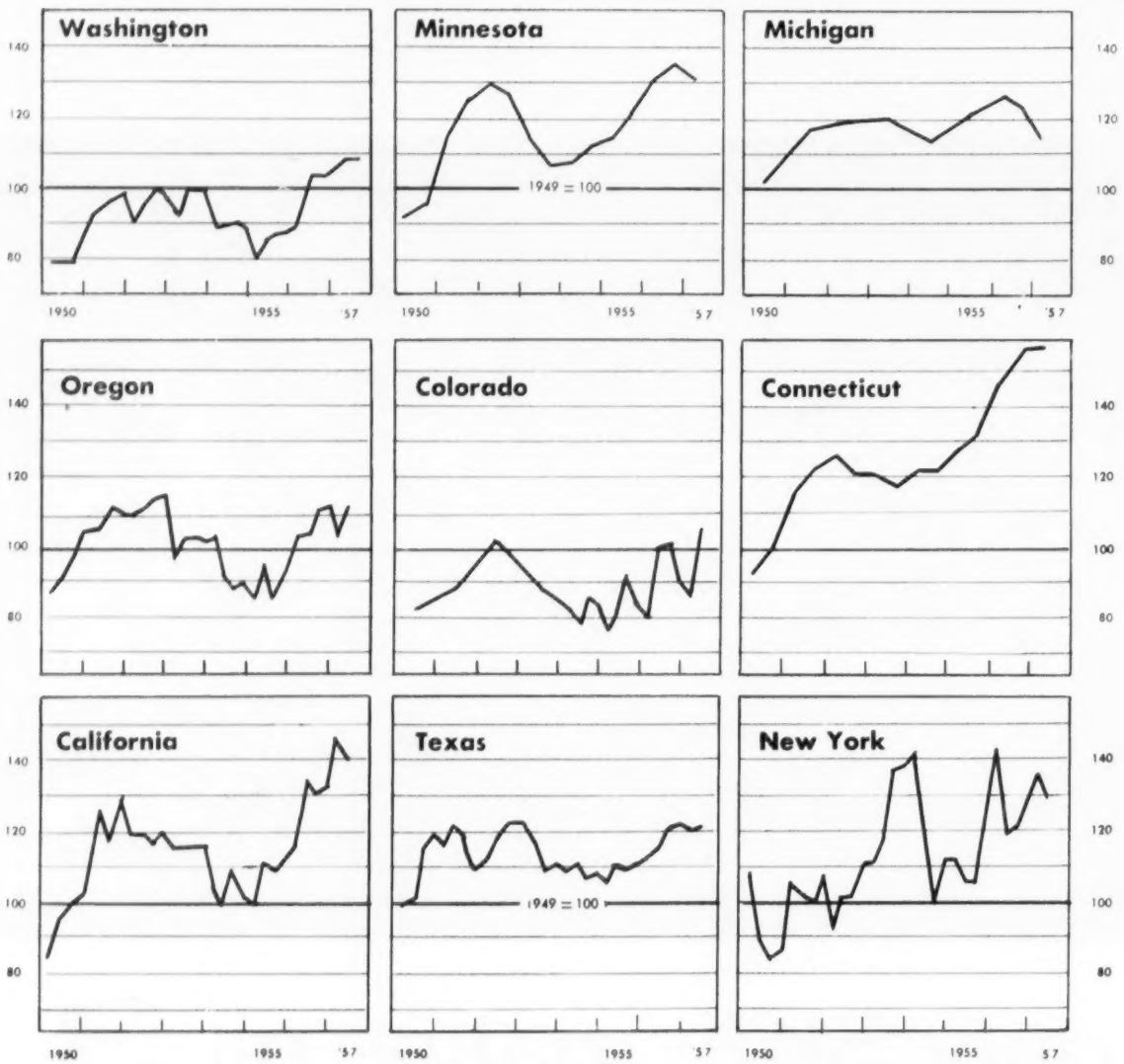
③ HI-SPEED, HEAVY-DUTY SKIL SAW

only SKIL makes all 3

For more than 30 years SKIL has pioneered in the design of saws to meet the special needs of builders. Now, we offer the widest choice ever with the addition of a top-handle saw. Only from SKIL can you choose from three types. And remember this—no matter which model you buy, you always get the same superior performance that has made SKIL Saw the favorite saw in the building field.

SKIL

Made only by SKIL Corporation, manufacturer of famous SKIL and SKILSAW products, 5033 Elston Avenue, Chicago 30, Illinois. In Canada: 3601 Dundas Street West, Toronto 9, Ontario.



Highway Bid Prices Keep Rising, But At Slower Pace

HIGHER PRICES bid by contractors have nicked a few cents off the purchasing power of the highway construction dollar during the last 12 months, but the rise in bid prices seems to be tapering off.

Bid prices on federal-aid highway jobs let in the first half of 1957 averaged 6.6% higher than in the first six months of 1956, according to the Bureau of Public Roads Composite Mile Bid Price Index. However, most of this rise came in the second half of last year when steel prices rose sharply and the new Interstate Highway program was first producing a stepped up volume of contracts. Bid prices on federal-aid work actually held steady between the first and second quarters of this year.

State highway departments computing their own indexes based on prices contractors bid on their projects confirm the rise in bid prices during the past year. For individual states, the increase for the first half of 1957 compared with the 1956 period ranges from 1% in New York and Minnesota to 15% in California.

continued on page 46

JOB REPORT FROM GOLDSBORO, N. C.

on the new CAT* DW15 (Series E)-No. 428 LOWBOWL Scraper

Whenever a new machine is introduced, this question comes up: "What'll it do on a job?" Reports from actual jobs in different sections of the country show there's a definite answer for you on the new Caterpillar DW15 (Series E)-No. 428 LOWBOWL Scraper. Compared with competitive units of similar capacity, this new earthmover heads the pack with high production.

Here are facts and figures from a contract on U. S. Highway 117 near Goldsboro, N. C. The contract, handled by S. T. Wooten Construction Co., Stantonsbury, involved moving about 3,000,000 cu. yd. of material in a section 2.3 miles long. The material was coarse, moist sand (70%) and clay (30%). Hauling loads of 14.1 bank cu. yd., the DW15 (Series E) unit averaged 7.02 round trips an hour on a 3,600-foot cycle. Details are shown in the box to the right.

From every angle, the new DW15 is designed for high production at low cost per yard. Its Caterpillar Engine packs 200 HP (maximum output capacity). With speeds up to 37.2 MPH plus the stability of four wheels, it delivers fast round-trip hauls with greater safety than two-wheel rigs. Its new wide-section 26.5 x 25 tires provide maximum flotation. And the new No. 428 LOWBOWL Scraper (13 cu. yd. struck, 18 cu. yd. heaped), provides a faster loading rate clear to the end of the loading cycle.

For comparative cost-of-operation figures on other actual jobs, see your Caterpillar Dealer. He's a source of reliable information. Ask him to show you *proof* that the new DW15 (Series E)-No. 428 can pay off for you! Name the date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

JOB DATA ON DW15 (SERIES E)-NO. 428*

Material: Coarse moist sand (70%) and clay (30%)	
Round-trip distance	**3,600′**
Average load time (min.)	**1.06**
Average haul time	**3.28**
Average turn and dump time	**.61**
Average return time	**3.61**
Average cycle time (incl. delays)	**8.56**
Average trips per hour	**7.02**
Bank cu. yd. per trip	**14.1**
Average hourly production (bank cu. yd.)	**99**

**The unit was push-loaded by a D8*

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

ONE GOAL: To concentrate our capabilities, resources and experience on the design, manufacture, distribution and service of job-tested heavy equipment.

THE LATEST, MOST COMPLETE INFORMATION ON THE NEW HIGHWAY PROGRAM — FREE

Here in one booklet is *all* the latest information on the new highway program. Find out how, where and when the money will be spent; standards for the new freeways, final routes of the Interstate System. Everything you need to know to share in the greatest construction job in history.

DEPT. CME-10, Caterpillar Tractor Co.
Peoria, Ill.

Please send me immediately _____ copies of "The Road Ahead."

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

two WINTER LINERS for the price of one

As safety men, abreast of the market, you know that this year it's easy to find Winter Liners selling at lower prices than those made by Bullard. Chances are you expected us to offer a competitive line of cheap liners. The fact is, we've done just the opposite. This new line of dark green Bullard Winter Liners is actually better and more costly to produce. The fine quality of each detail in their fabrication is assurance your Winter Liner investment is protected . . . that you'll get at least double the life from Bullard Liners. Examine one closely. Every seam is lock stitched . . . they can't unravel. All outside fabrics are extra heavy water repellent drill . . . lined with pre-shrunk, flame resistant fleece.

This is why when matched against any price competition we can say with certainty that Bullard gives you two Winter Liners for the price of one.

Standard Winter Liners with tie cords. #70-EL-33

Liner with Chin Strap #70-EL-50

Liner for Extreme Cold Weather Conditions #70-WL-51

Skaters' Type #70-WL-1K All wool knit fits snugly over head, covering neck and ears.

Light Weight Liner #70-WL-2K (Nylon stretch-on) Nylon knit "skull cap" type liner.

Arctic Type #70-WL-3K All wool knit protects head and face. Front slips down over mouth.

These new liners are made from deep green wind, fire resistant and water repellent drill. Lined inside with flame resistant fleece, backs are extended to protect wearers' necks. #70-EL-33 fastens with tie cords for chin, #70-EL-50 has elastic chin strap with plastic hook and eye, #70-WL-51 is the same as #70-EL-50 only a thick insulating layer of wool is added between drill and fleece for extra warmth.

Write for price lists
E. D. Bullard Company
Sausalito, California

BULLARD
INDUSTRIAL SAFETY EQUIPMENT

the best combination for

EXTRA POWER .. EXTRA PRODUCTION

Here's how to make a good machine better! Specify Pettibone SPEEDALL Model 250 *powered with a P&H Diesel.*

A responsive engine with high torque and lots of reserve strength, the P&H Diesel supplies power to handle heaviest digging at a high rate of speed—to handle peak loads without stalling. Downtime for restarts, servicing and repairs is held to a minimum.

The P&H Diesel provides other profitable performance features:

- **Faster Starts**
- **Better Idling**
- **Lower Fuel Cost**
- **Compact Design for Easier Maintenance**
- **Smaller Parts Inventory**

Efficiency and simplicity of P&H Diesel design assure lowest operating and maintenance costs. The P&H Diesel operates economically on low cost No. 2 diesel fuel. It has 25% fewer parts. All wearing parts are interchangeable.

Specify the P&H Diesel for all your construction equipment. For additional information on P&H Diesel powered SPEEDALLS see your Pettibone dealer or write for Bulletin Z-26.

HARNISCHFEGER

P&H DIESEL ENGINE DIVISION, Crystal Lake, Ill.

Bid prices have increased more in the Far West during the past year than in other sections of the country for which state highway department bid price indexes are available. Besides the rise in California, Washington State has a 13% increase, and Oregon reports a 4% climb over last year.

Texas, with an 8% bid price rise is another state experiencing greater-than-average increase in highway bid prices during the last twelve months.

By contrast, prices are up only 1 to 2% in Minnesota, New York, and Nebraska. Connecticut shows a much more substantial increase, 7%, than its neighbor New York.

Two states are bucking the trend to higher prices on highway work. Michigan's highway bid price index in the first half of 1957 was 9% below the first six months of 1956. And in South Dakota, the bid prices pulled the state highway department's price index for the January-June period a scant 1% below a year ago.

continued on page 49

Highway Bid Price Trends By States

State Highway Department Indexes, 1949=100

State & Region	1956 (Quarter) Q1	Q2	Q3	Q4	1957 (Quarter) Q1	Q2	Per Cent Change 1956-57*
FAR WEST—							
California	115	134	131	132	146	140	+15
Oregon	103	104	110	111	104	111	+ 4
Washington	89	103	104	n.a.	108	108	+13
Idaho	124	104	113	132	96	139	+ 3
WEST OF MISS. R.							
Colorado	80	100	102	89	86	105	+ 6
Minnesota	...	130-1-	...	136#	...	131	+ 1
South Dakota	87	101	98	85	87	99	— 1
Texas	112	114	120	122	120	122	+ 7
EAST OF MISS. R.							
Connecticut	...	147-1-	...	156#	...	157-1-	+ 7
Michigan	...	126-1-	...	123#	...	115-1-	— 9
New York	142	119	121	128	135	129	+ 1

*Based on first half of '57 vs first half of '56 -1- 1st Half # 2nd Half

Before you buy any truck mixer learn about CMC TED Transcretes first! WRITE FOR NEW, FREE, FULLY ILLUSTRATED FOLDER.

FOR STILL BIGGER SAVINGS— MORE PROFIT ON EVERY POUR

Use truck engine power without sacrificing performance — save as much as $55 per month per machine on gasoline alone. All the job-tested, time proven BIG VALUE features of other Transcretes — including trouble-free Floating Drive and Swing-Out Hopper. YOUR GUARANTEE OF FASTER CHARGING, MORE THORO MIXING, QUICKER DISCHARGE — AT LESS COST!

CONSTRUCTION MACHINERY CO., WATERLOO, IOWA

ENGINEER'S FIELD REPORT

PRODUCT RPM MULTI-SERVICE GEAR LUBRICANT

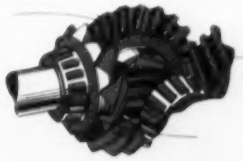
FIRM YAKIMA CEMENT PRODUCTS CO. Yakima, Washington

No scoring or pitting of differential gears in 6 years

In Six Years of using RPM Multi-Service Gear Lubricant, not one differential in the entire 20-truck fleet of Yakima Cement Products Co. has shown any scoring or pitting of gear teeth. Despite grueling service delivering ready-mix concrete and other building materials to off-highway construction sites, lubricant has never failed to do its job. Firm's six-wheel-drive trucks supply sand, gravel, ready-mix concrete, and fabricated concrete products to projects within 100 miles of Yakima, Washington.

Ready-Mix Truck like rest of firm's vehicles, is rebuilt Army surplus 2½-3 ton International. "In the fleet of 21 six-wheel-drive trucks, we have never had a transmission or differential failure due to lubrication, despite our severe operating conditions since we started using RPM Multi-Service Gear Lubricant," says firm's chief mechanic, Art Weber. This lubricant is also used in all mixer drive gear boxes.

Why RPM Multi-Service Gear Lubricant prevents wear



- Special compound forms protective lubricating coating on gears by chemical reaction with metal...resists rubbing action of hypoid gear teeth.
- Withstands extreme temperatures and pressures...highly oxidation resistant...keeps bearings and gears cool.
- Inhibitors resist rusting, stop foaming...lubricates integral bearings...will not separate.

For More Information or field help with any fuel or lubrication problem, contact representative of any company listed or write direct.

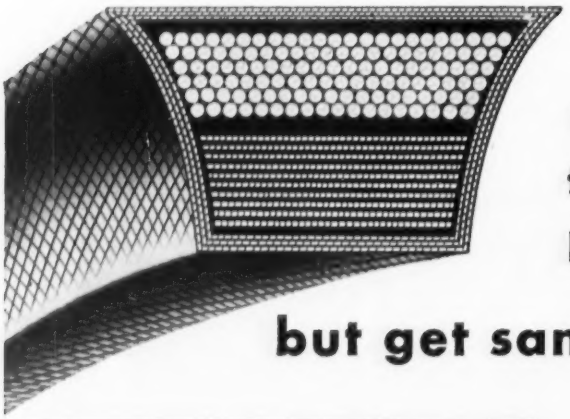
AUTOMOTIVE LUBRICANTS RPM

TRADEMARK "RPM DELO" AND DESIGN REG. U. S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

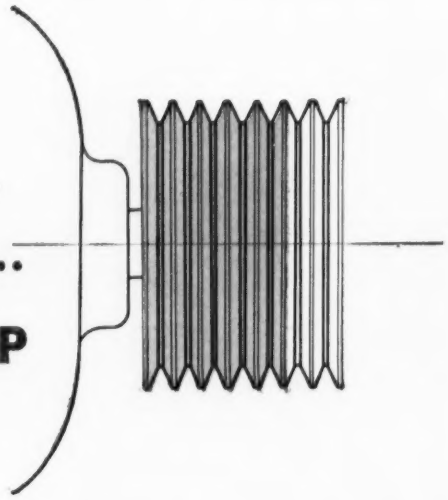
STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA COMPANY, Denver 1, Colorado

5 Gates Super Vulco Ropes do the work of 7 standard V-belts



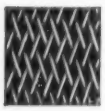
Use fewer belts...

but get same HP



No other V-Belt has ALL these advantages

1. Flex-Weave Cover (U.S. Pat. 2519590)



A Gates exclusive: provides greater flexibility with far less stress on fabric. Cover wears longer . . . increases belt life . . . more power available to driven machine.

2. Concave Sidewalls (U.S. Pat. 1813698)

Concave sides (Fig. 1) increase belt life. As belt bends, concave sidewalls become straight, making uniform contact with sheave groove (Fig. 1-A). Uniform contact means less wear on sides of belt . . . far longer belt life.

3. Tough, resilient Tensile Cords

Super strong resilient tensile cords provide 40% greater horsepower capacity . . . easily absorb heavy shock loads . . . reduce number of belts required save weight and space.

4. High Electrical Conductivity

Built into Gates Super Vulco Ropes for safer drives (in explosive atmospheres).

5. Oil, Heat, Weather Resistant

Special rubber compounds make Super Vulco Ropes highly resistant to heat, oil, and prolonged exposure to weather.

Cut sheave width and weight . . . design your drive to benefit from the greater HP capacity of Gates Super Vulco Ropes.

5 Gates Super Vulco Ropes will do the work of 7 Standard V-Belts. A Super Vulco Rope Drive delivers more HP per dollar invested than any standard V-Belt drive.

Sheaves with fewer grooves cost less . . . weigh less . . . occupy less space. Your drive design is improved.

Helpful drive data is quickly available to you. Simply call your nearby Gates distributor for advice from a Gates V-Belt Specialist. Stocks carried in industrial centers throughout the world.

The Gates Rubber Company
Denver, Colorado

TPA 204

Gates — The Mark of *Specialized* Research

Gates Super VULCO ROPE Drives

CONSTRUCTION BUSINESS . . .
continued from page 46

1957 RENTAL RATES FOR CONSTRUCTION MACHINERY

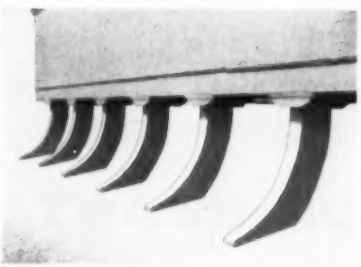
Associated Equipment Distributors

Type of equipment	Per Month	Per Week	Per Day
Air compressors, portable:			
Gas, 86-105 cfs	$189.00	$62.50	$18.75
Gas, 126-160 cfs	248.00	82.25	24.25
Gas, 188-210 cfs	332.00	108.00	32.75
Gas, 251-315 cfs	446.00	147.00	44.75
Diesel, 186-210 cfs	410.00	135.00	43.25
Diesel, 251-315 cfs	536.00	176.00	56.75
Diesel, 366-500 cfs	761.00	253.00	81.25
Diesel, 501-600 cfs	922.00	306.00	99.00
Cranes, cap at ft radius:			
Diesel crawler			
Above 5 up to 6¼ ton, 10'	899.00	294.00	99.25
Above 6¼ up to 8¾ ton, 12'	1083.00	362.00	122.00
Above 8¾ up to 11¼ ton, 12'	1248.00	413.00	138.00
Above 14½ up to 19½ ton, 12'	1436.00	480.00	159.00
Above 24½ up to 29½ ton, 12'	2117.00	698.00	228.00
Above 29½ up to 34½ ton, 12'	2291.00	737.00	251.00
Above 18 up to 22 ton, 20'	2891.00	951.00	312.00
Above 10 up to 13 ton, 45'	3846.00	1283.00	420.00
Above 20 up to 24½ ton, 45'	4977.00	1702.00	572.00
Graders, rubber tired; diesel:			
Conventional transmission			
Up to 16,500 lbs	657.00	213.00	67.75
16,501 to 20,500 lbs	831.00	262.00	81.25
22,501 to 26,000 lbs	1122.00	366.00	115.25
26,001 to 30,000 lbs	1272.00	424.00	136.25
Torque converter			
16,000 to 21,000 lbs	1109.00	358.00	112.75
21,001 to 25,000 lbs	1290.00	437.00	142.00
25,001 to 29,500 lbs	1461.00	489.00	163.00
29,501 to 45,000 lbs	1919.00	664.00	219.75
Loaders (Shovel), tractor			
Front end, wheel, front or rear drive, gas			
Up to ¾ cy	327.00	108.00	37.25
Above ⅜ up to ½ cy	381.00	126.00	40.25
Above ½ up to ⅝ cy	425.00	142.00	47.00
Above ⅝ up to ¾ cy	510.00	183.00	55.25
Above ¾ up to 1 cy	606.00	212.00	66.75
Above 1 up to 1¼ cy	753.00	258.00	81.50
Above 1⅝ up to 2 cy	1224.00	404.00	124.00
Mixers, concrete, portable:			
Tilt drum, 3 to 3½ cy	65.00	23.00	.....
Tilt drum, 6 cy	94.75	34.00	.....
Tilt drum, 9 cy	105.00	37.00	.....
Non-tilt, non pwr charge, 3½ cy	82.75	28.75	.....
Non-tilt, power charge, 6 cy	126.25	44.00	$14.25
11 cy	183.00	64.25	21.50
16 cy	258.00	89.25	28.25
Add for batchmeter*	12.50	4.55	1.80
Add for pump*	10.25	3.30	1.25
*Rates include measuring tank but not this			
Pumps:			
Centrifugal, self priming			
Gas, 1½-in, 3M-4M	50.00	17.25	5.75
Gas, 2-in, 7M-10M	61.50	21.25	7.15
Gas, 3-in, 15M-20M	76.75	26.50	8.95
Gas, 4-in, 30M-40M	117.00	40.25	13.50
Gas, 6-in, 90M	179.00	61.25	20.25
Diesel, 6-in, 90M	359.00	122.00	41.75
Diesel, 8-in, 125M	533.00	183.00	59.50
(Hose not included)			
Rollers:			
2-axle tandem, diesel, 5-8 tons	538.00	174.00	57.50
2-axle tandem, diesel, 6-9 tons	606.00	198.00	67.25
2-axle tandem, diesel, 8-10 tons	645.00	214.00	72.00
2-axle tandem, diesel, 8-14 tons	714.00	239.00	76.50
2-axle tandem, diesel, 10-14 tons	817.00	276.00	84.50
2-axle tandem, diesel, 10-16 tons	1230.00	317.00	92.50
Shovels—diesel crawler			
⅜ cy	$924.00	$306.00	$101.00
½ cy	1189.00	395.00	131.00
¾ cy	1442.00	499.00	165.00
1 cy	1843.00	606.00	201.00
1½ cy	2644.00	855.00	287.00
2 cy	3625.00	1226.00	395.00
2½ cy	4350.00	1446.00	486.00
3 cy	5456.00	1834.00	588.00
3½ cy	6299.00	2085.00	670.00
Scrapers, w.o. power units			
Heaped mass			
Above 5, up to 7 cy	363.00	115.00	37.25
Above 7, up to 10 cy	488.00	156.00	49.00
Above 10, up to 13½ cy	596.00	185.00	56.75
Above 13½, up to 18 cy	722.00	240.00	72.00
Above 17, up to 22 cy	948.00	316.00	99.25
Above 22, up to 29 cy	1222.00	395.00	122.00
Above 29, up to 37 cy	1752.00	523.00	166.00

FLECO®

. . . for low-cost land improvement

3 Ideas to help you get more clearing production from your Caterpillar Track-Type Tractor



(Above) Fleco Tree Cutter Rake Teeth.

(Below) Fleco Heavy Duty Cab Guard.

Idea No. 1 — *equip it with a Fleco Tree Cutter!* For mass production clearing on power line rights-of-way, dam reservoirs, road right-of-way, pasture land and similar sites where trees must go and stumps cut flush with the ground can stay, the Fleco Tree Cutter is the economical solution to the problem.

Idea No. 2 — *equip Tree Cutter with Fleco Teeth!* Tree Cutter can be quickly converted from a shearing, cutting unit to raking, stacking equipment. Teeth quickly replace cutting edge and standards, and are held in main frame with one bolt each.

Idea No. 3 — *give added protection to your operator with a Fleco Cab Guard!* A protected operator is a more productive man on the job.

Your Fleco-Caterpillar Dealer will gladly show you all the details on the complete line of Fleco Land Clearing Products for all sizes of Caterpillar crawler Tractors.

FLECO CORPORATION

Jacksonville, Florida

ROCK, ROOT & BRUSH RAKES
TREE CUTTERS • UNDERCUTTERS
CAB GUARDS • ROOT CUTTERS
DETACHABLE & PULL STUMPERS
TREEDOZERS • ROLLING CHOPPERS
HEAVY-DUTY TOOL BARS

DECADE OF MANUFACTURING 1947 FLECO 1957 LAND CLEARING EQUIPMENT

BEAUTY...OR BEAST?

We'd be the last to claim that Amsco® Dippers have any inherent glamour. That's why we induced the pert 115-pound* blond to pose in one of our 7-yd. dippers at a recent trade show. Got a lot of attention, too!

But we know that experienced operators *specify* these all-cast Manganese Steel Dippers because they're real "beasts"—when it comes to strength and ruggedness. By way of proof, glance at the other photo. It shows a 9-yd. Amsco Dipper hoisting a 60 to 70-ton* rock out of the St. Lawrence Seaway Channel. There's plenty more proof available, too—on the extra strength, digging ability and long life of Amsco Dippers. That's why they're the number one original-equipment choice on most leading makes of power shovels!

Consult your equipment manufacturer, or write us direct for new booklet on *Amsco Power Shovel Equipment*, giving detailed reasons why Amsco Dippers are real "beasts" when it comes to rugged digging work.

*Estimated

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

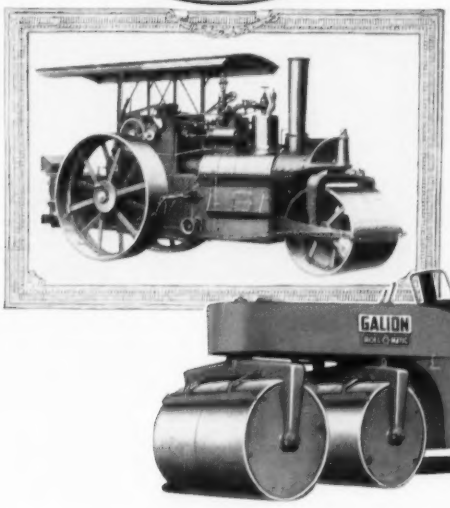
OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE, QUEBEC

THE GALION IRON WORKS & MFG. CO.
GALION 1907 50th ANNIVERSARY 1957
GALION, OHIO · U.S.A.

There's been a World of Change

Highway building methods and procedures have made tremendous strides over the past 50 years. GALION is proud to have been an important part of this half century of highway progress.

With our new GRADE-O-MATIC Graders and ROLL-O-MATIC Rollers—and the outstanding service facilities of our Distributors—we are ready to help you meet tomorrow's even greater challenge.

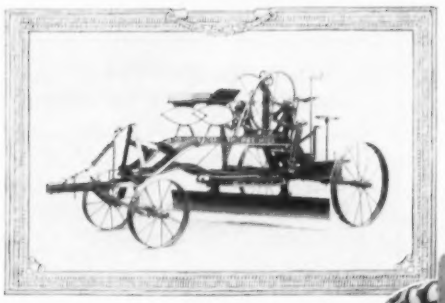


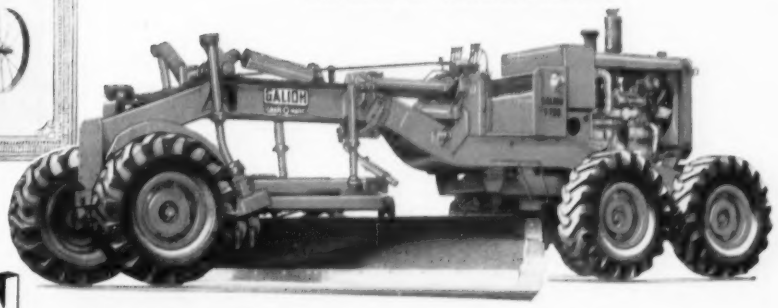
GALION is the World's Largest Builder of Rollers

TOMORROW'S CHALLENGE

The modernization and renovation of the highway system of the United States, authorized in the multi-billion dollar Federal Highway Program, will test the skill and capacity of the Construction Industry as well as State and County Highway Departments as never before.

Make sure you meet the test by modernizing your fleets of Graders and Rollers with Galion GRADE-O-MATIC and ROLL-O-MATIC models. They are designed to meet the performance demands of TOMORROW.





GALION Builds the Model T-700 — the world's largest, most productive Motor Grader.

ESTABLISHED GALION 1907

MOTOR GRADERS · ROLLERS

TRENCH ROLLERS · PORTABLE ROLLERS · 3-WHEEL ROLLERS · TANDEM ROLLERS · MOTOR GRADERS

THE GALION IRON WORKS & MFG. CO., General and Export Offices, Galion, Ohio, U.S.A.
Cable address: GALIONIRON, Galion, Ohio

ROME DISK-PLOWING HARROWS

for
- STABILIZING
- AERATING
- MIXING BASE MATERIALS

Perfect base finishing tool for stabilizing, aerating and mixing base materials on fills or cuts on highways, dams, airports and levees is a Rome Disk Plowing Harrow. It spreads and smooths off surface irregularities, cutting and mixing base materials to a depth of 9" or more per pass, leaving soil in a mellow condition for thorough, dense compaction.

When your job calls for pioneering through small trees and underbrush — a nuisance for bulldozer equipment — call out the Rome. It cuts and chops dense growth, often removing roots and all. Ideal for right-of-way maintenance, and an essential step in site preparation.

Whatever your base preparation, dirt moving or clearing problem, there's a Rome Disk Plowing Harrow to match your needs and your equipment. See your Rome-Caterpillar Dealer for all the facts.

YOUR ROME DEALER IS YOUR CATERPILLAR DEALER

Rome Disk Plowing Harrows

ROME PLOW COMPANY • CEDARTOWN, GEORGIA

CONSTRUCTION BUSINESS . . .

continued from page 49

Rental Rates . . .

Tractors—scrapers:			
2-wheel tractor with 2-wheel scraper (heaped mass)			
Above 6½, up to 11 cy	1505.00	524.00	166.00
Above 12, up to 16 cy	2162.00	729.00	243.00
Above 14½, up to 19 cy	2565.00	892.00	279.00
Above 18, up to 20 cy	2804.00	998.00	315.00
Above 19, up to 27 cy	3425.00	1205.00	372.00
Tractors—diesel crawler:			
Gear drive, w.o. attachments			
25–35 drawbar hp	434.00	145.00	45.25
36–44 drawbar hp	530.00	175.00	56.25
45–56 drawbar hp	690.00	227.00	73.25
60–71 drawbar hp	822.00	275.00	84.00
72–79 drawbar hp	999.00	330.00	103.00
80–95 drawbar hp	1029.00	342.00	105.00
96–115 drawbar hp	1336.00	433.00	140.00
116–131 drawbar hp	1352.00	450.00	149.00
132–150 drawbar hp	1543.00	501.00	156.00
151–170 drawbar hp	2009.00	639.00	201.00
201–265 drawbar hp	2809.00	908.00	283.00
Torque converter, without attachments			
120–144 net engine hp	1524.00	497.00	151.00
145–164 net engine hp	1736.00	561.00	182.00
165–185 net engine hp	1860.00	588.00	196.00
186–214 net engine hp	2249.00	729.00	233.00
251–330 net engine hp	3336.00	1068.00	332.00
over 330 net engine hp	3985.00	1325.00	440.00
Bulldozers:			
For crawler tractors of			
36–44 drawbar hp	165.00	55.25	17.75
72–79 drawbar hp	248.00	84.75	28.75
96–115 drawbar hp	298.00	94.25	33.25
132–150 drawbar hp	371.00	121.00	38.75
201–265 drawbar hp	480.00	164.00	53.50
For 4-wheel rubber tired tractor			
190–250 engine hp	1004.00	365.00	152.00
Trenching machines:			
Ladder or vertical boom:			
Diesel, 4', 12"	1217.00	406.00	131.00
Diesel, 5', 18"	1222.00	422.00	133.00
Diesel, 8½', 36"	1435.00	550.00	188.00
Wheel type:			
Diesel, 5'–6", 24"	1175.00	383.00	138.00
Diesel, 6'–0", 31"	1916.00	637.00	215.00
Diesel, 6'–0", 36"	2297.00	765.00	257.00
Trucks, off-highway			
Single axle, rear dump			
Above 7½, up to 10 tons	1582.00	550.00	181.00
Above 10, up to 15 tons	2071.00	712.00	246.00
Above 15, up to 20 tons	2283.00	806.00	283.00
Above 20, up to 23 tons	2960.00	969.00	330.00

SOME BIG CONTRACT AWARDS OF THE MONTH

United Engineers & Constructors Inc., 1401 Arch St., Phila., Pa. Electric power plant, Norwalk Conn. for Connecticut Light & Power Co., Seldon St., Berlin, Conn. $25,000,000.

Turner Construction Co., 150 E. 42 St., New York 17, N.Y. A 23-story office at 105 W. Monroe St., Chicago, Ill. for Harris Trust & Savings Bank, 111 W. Monroe St., Chicago 3, Ill. $20,000,000.

M. N. Maguire, Inc., 120 Tremont St., Boston, Mass. Off site improvements for Capehart family housing at Air Force Stations, Caribou, Caswell, Connor and Limestone, ENG-19-016-57-29, Maine. U.S. Eng., 150 Causeway St., Boston, Mass. $86,000.

continued on page 55

MORE POWER AND MANEUVERABILITY WITH "Euc" TC-12's ON THE JOB

Euclid "Twin" used for faster production

The dirt work for extension and replacement of runways at Geiger Air Base in Spokane, Washington, called for 400,000 yds. to be moved in 90 days. From over 1200 hours previous experience with his big Euclid TC-12, contractor Neil Degerstrom knew it was his most productive crawler. So, putting his other tractors on less important work, he used the "Twin" for pushloading scrapers to maintain high production on this rush job.

Heavy dozing jobs prove TC-12 work-ability

On a large scale Pennsylvania stripping operation, the Torqmatic-equipped Euclid "Twin" is leveling spoilbanks, cleaning up around the dragline and building access roads. The TC-12's superior work-ability, speed and easy maneuverability show up in getting these jobs done faster and moving from one location to another more quickly.

436 TOTAL HP with
2 ENGINES and
2 TORQMATIC DRIVES

Compare horsepower, weight, speed, drawbar pull, maneuverability, ease of operation, visibility, etc.— the "Twin" is unmatched. Put them all together and you get low cost performance that proves ***Euclids are your best investment.***

EUCLID DIVISION • GENERAL MOTORS CORPORATION • Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

ACCO for Better Values

American Cable
TRU-LAY VHS® WIRE ROPE
15% STRONGER

Longer life from VHS scraper and dozer cable results in less down-time ...MORE DIRT MOVED

—says Tennessee Contractor

Here's fresh proof that TRU-LAY VHS cable sets new performance records under toughest earth-moving conditions. Mr. M. C. West, road building contractor, Columbia, Tennessee, says: "VHS lines give us twice the service we formerly got from Improved Plow Steel rope. I figure this is due to its 15% extra strength, better abrasive properties and lifetime lubrication.

"Our scrapers are pulled by a Cat D-6 tractor with a similar unit behind as a pusher. These rigs handle everything from wet, sticky material to giant boulders. In spite of the different work loads, one of our men operated a scraper using VHS cable for six months without breaking a line."

A New Grade of Wire Rope

TRU-LAY VHS is a new grade of wire rope, 15% stronger than Improved Plow Steel which has been the top grade up to now. It is also tougher and more resistant to abrasion. It was introduced three years ago and recommended for only the hardest jobs such as scrapers, dozers, draglines, shovel hoists, logging chokers and rotary drilling.

If your work demands a superior grade of rope for any of these uses, get TRU-LAY VHS. If your work doesn't require the extra strength and ruggedness of VHS then get TRU-LAY preformed made of Improved Plow Steel.

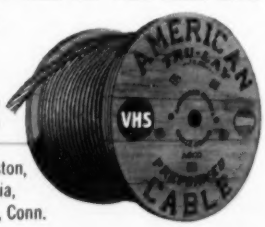
Available to You Now

Large warehouse and distributor stocks, backed up by expanded production, assure you of immediate shipment and an uninterrupted supply of VHS. Ask for VHS next time you order.

ACCO
TRADE MARK

American Cable Division
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.



CONTRACTS AWARDED . . .
continued

Sharman, Allen Gay & Taylor, Bayou Bldg., Houston, Tex. A 112-mi gas transmission line from Brush Control Station near West Richfield in Summit County to Sarahsville in Noble County where it will join Texas Eastern Transmission line, Ohio for East Ohio Gas Co., 1405 E. 6th St., Cleveland, Ohio. $13,000,000.

Warren Eng. Co., Warren, Ohio. 540 homes including 18 apartment buildings on 60-acre site between Austin Village Shopping Center in W. Market St. and Trumbull Shopping Plaza in Parkman Rd., Warren, Ohio. Warren Development Corp., Warren, Ohio. $10,000,000.

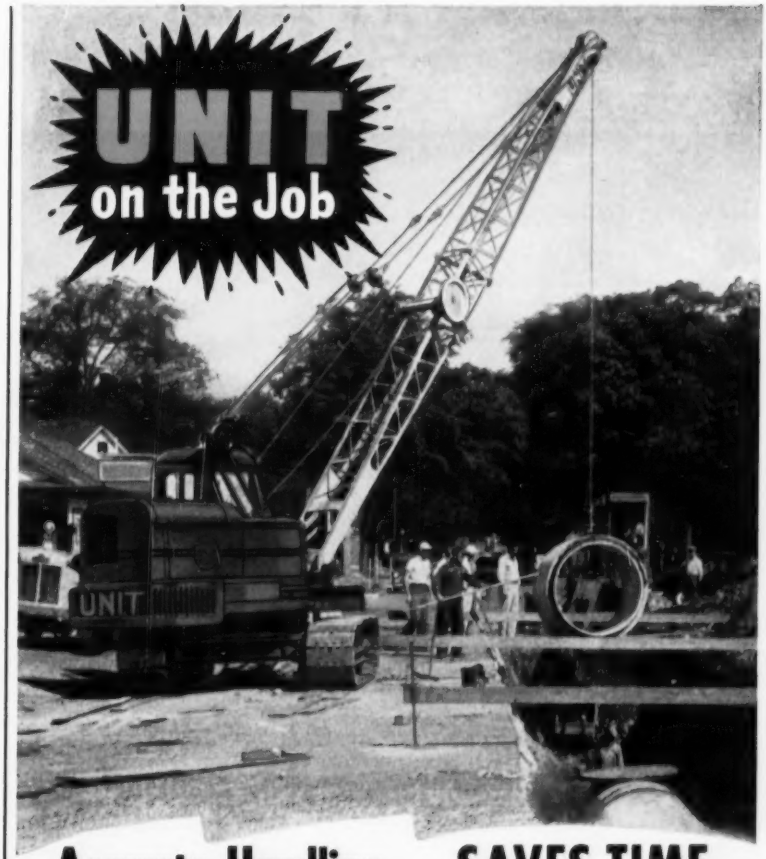
Stone & Webster Eng. Co., 49 Federal St., Boston, Mass. Design and construct brewery at Old Henderson Air Field, Tampa, Fla. Joseph Schlitz Brewing Co., 235 W. Galena St., Milwaukee, Wis. $20,000,000.

J. F. Pritchard & Co., 4625 Roanoke Parkway, Kansas City, Mo. Design and construct extraction plant to recover heavier hydrocarbons from gas, Kenova, W. Va. for Columbia Gas System, 120 E. 41 St., New York, N.Y. $8,000,000.

Westinghouse Corp., 40 Wall St., New York, N.Y. Furnishing thirteen 167,000-kva generators for main generator plant for Niagara Power Project for New York Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N.Y. $20,049,895.

George A. Fuller Co., 310 W. 8th St., Los Angeles, Calif. 800-units title VIII Housing, Camp Cooke Air Force Base, Lompoc, Calif. Air Force Base Ballistic Missile Div., Air Research & Development Command P.O. Box 262, Inglewood, Calif. $10,499,691.

Charles L. Harney Construction Co., 575 Berry St., San Francisco, Calif. Stadium in Bayview Hills for New York Giants, near Hunters Point, including parking area for 10,000 cars, San Francisco, Calif. City and San Francisco Co. Recreation and Park Comm., Fell and Stanyon Sts., San Francisco, Calif. $10,000,000.

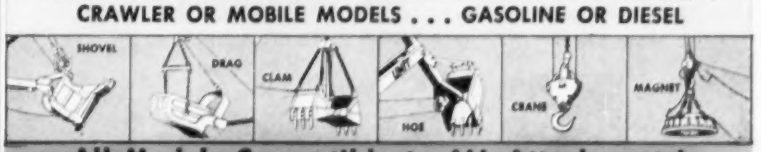


Accurate Handling . . . SAVES TIME

This sturdy UNIT Crawler Crane offers plenty of power plus accurate control. Spots heavy sewer pipe perfectly into the desired position. Adjustable Hook Rollers, Extra Long Crawlers and Wide Multiple Hinged Crawler Shoes provide all-around stability. Full Circle Swing, controlled from within UNIT'S FULL VISION CAB, provides safe and efficient operation. The operator has a complete view of the entire job at all times. GET THE FACTS! Investigate this modern UNIT and its many features. Write today for literature.

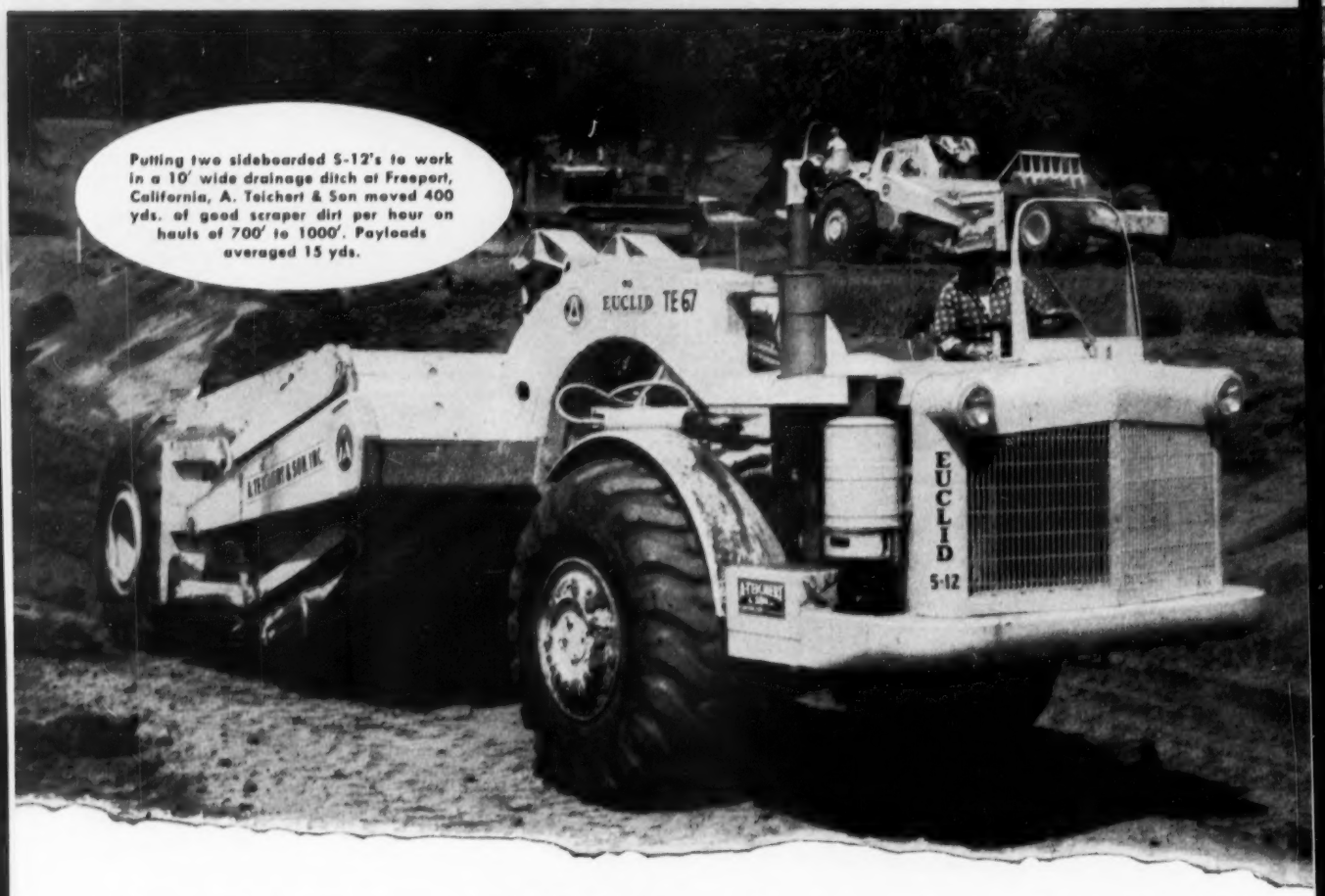
UNIT CRANE & SHOVEL CORPORATION
6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

½ or ¾ YARD EXCAVATORS . . . CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

S-12 "Eucs" prove their



Putting two sideboarded S-12's to work in a 10' wide drainage ditch at Freeport, California, A. Teichert & Son moved 400 yds. of good scraper dirt per hour on hauls of 700' to 1000'. Payloads averaged 15 yds.

Among medium size scrapers, the Model S-12 Euclid stands out as a real workhorse . . . on every kind of earthmoving job . . . in every type of scraper material! Power-packed with a 218 h.p. engine, this versatile "Euc" is cutting earthmoving costs to the bone wherever it works. Standard 24.00 x 25 tubeless tires provide plenty of traction and flotation for tough going. Hydraulic levers control scraper operations . . . eliminate downtime and expense caused by cable breakage. The S-12 can turn in only 31 ft. and carries 17 yd. heaped loads at speeds up to 21 mph. Pay-off advantages such as these are reasons why so many contractors say ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

A fleet of seven S-12 "Eucs" is moving over 400,000 yds. of clay on a 3-mile section of the Illinois Toll Road for Carl Bolander & Sons . . . they recently completed a 750,000 yd. road job in Minneapolis.

At the 600 acre Lawrence Brook Housing Development in New Brunswick, N. J., S-12 maneuverability, easy loading and fast cycle time paid off for Arnolt Bros.

worth in any scraper dirt!

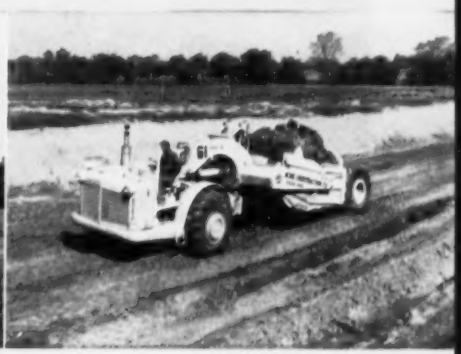
J. H. Hood & Son of Knoxville, Tenn. moved 10,000 yds. of ripped slate per week with two S-12's on 1000' hauls. Jim Hood chose the S-12 as best all-around scraper . . . likes the rigs better every day.

Worthington Construction Co. moved heavy clay and shale on the Route 22 by-pass near Allentown, Pa., with two S-12 Scrapers push-loaded by a "Euc" TC-12 Tractor.

In South Miami, Florida, three S-12's maintained high production on a 400,000 yd. land improvement job for Three Boys Improvement Co.

In tripling long established earthmoving production records, Ben Ginter Const. Co., Ltd. of Vancouver maintained 93% availability with six S-12's in ripped hard pan and rock on a Trans-Canada highway job.

O. J. Hoag made the dirt fly with five S-12 "Eucs" on construction of protective barricades and access roads at Wurtsmith Air Force Base in Michigan.



Acme Construction Co. used S-12 Scrapers in their equipment spread for grading a railroad spur to an industrial site near Twinsburg, Ohio.

S-12 performance has paid off in low cost production for N. A. Degerstrom on the Spokane Freeway, Geiger Air Base and a railroad construction job at Othello, Wash.

Sloan Construction Co. of Greenville, S. C. graded the site for a Piedmont & Northern Railroad warehouse with two Euclid S-12 Scrapers.

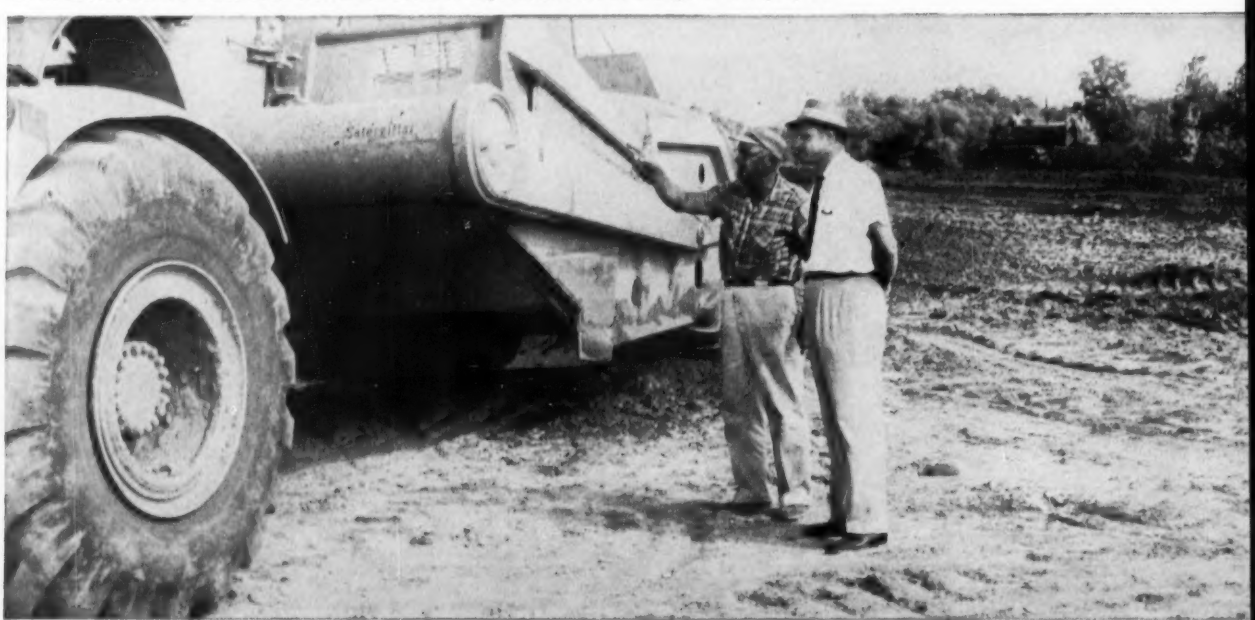
On a Florida housing site, Howard Thomas Const. Co. got 14 to 16 yd. heaped loads of sand with three S-12's. Availability of 98% has helped keep jobs ahead of schedule.

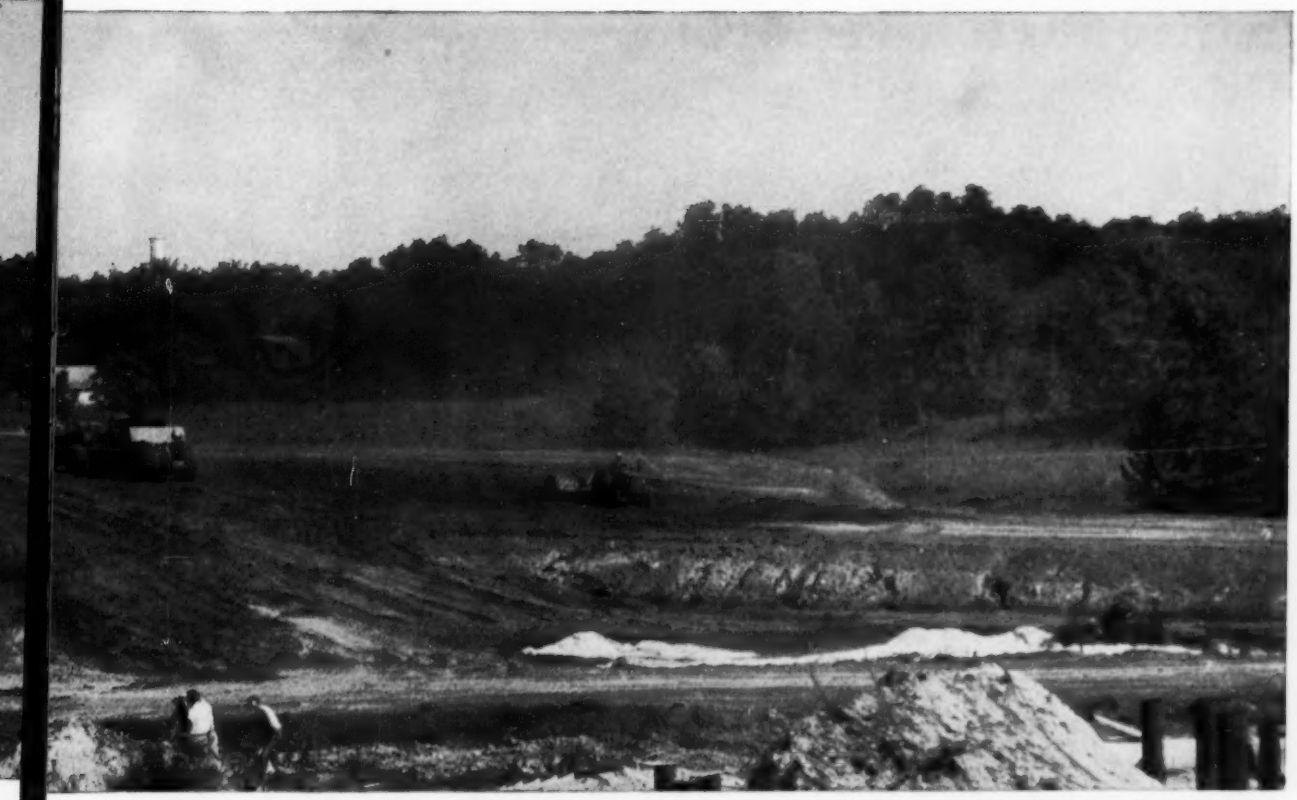
Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Gulf products and fine service

J. W. Payne, Job Superintendent, and G. W. Moore, Gulf Sales Representative, inspect one of W. L. Robinson's Cats. Fred Warren is General Superintendent in charge of the project.





Over a million cubic feet of grading will be done on this roadway construction job in Monroe County, Georgia. W. L. Robinson Construction Company depends on Gulf petroleum products to avoid mechanical delays.

keep equipment rolling on Georgia Highway Project

Now under construction is Georgia's first interstate project under the new Federal Highway Act.

The job consists of 3.179 miles of roadway construction on Route 19 in Monroe County. More than 1,300,000 cubic feet of grading will be required in building 3 highway grade separations with parallel service roads on each side of the 4 lanes. W. L. Robinson Construction Company of College Park, Georgia, is the contractor on this million-and-a-half dollar job.

Like many other profit-conscious contractors, W. L. Robinson Construction Company relies on Gulf products and service to keep equipment rolling. Gulf quality lubricants provide an extra margin of protection against mechanical delays. Gulf fuels insure top engine performance. 1500 strategically-located Gulf warehouses assure prompt deliveries. And Gulf petroleum engineering counsel is always available, without charge.

On your next job, call in the Gulf man. And in the meantime, write for these two helpful booklets: "Gulf and Your Business" and the new edition of "Contractors' Guide."

GULF

GULF OIL CORPORATION
1822 Gulf Building, Pittsburgh, Pennsylvania

Without any obligation on my part, send me a copy of:
☐ "Gulf and Your Business"
☐ New edition of "Contractors' Guide"

Name_____
Company_____
Address_____
City_____ Zone____ State_____

B.F.Goodrich report:

Hose picks up a lake and moves it away

B.F.Goodrich improvements in rubber brought extra savings

Problem: That pump works night and day, draining water out of a huge excavation. It's where one of the locks is being built on the St. Lawrence Seaway. Only one trouble.

The water is loaded with clay, sand, gravel, small stones. The combination is so rough that the teeth on excavation shovels used here have to be changed several times a day. Such sharp particles would wear holes in ordinary hose or even in metal pipe.

What was done: Luckily, the engineer in charge knew about a tough rubber hose, developed by B.F.Goodrich for handling other troublesome materials. The special lining in this hose is soft enough so the sharp, gritty particles simply bounce off the rubber instead of digging in and cutting it to shreds.

Savings: B.F.Goodrich hose had been on the job six months when the picture was taken. It gulps thousands of gallons of water-and-grit every day, and it's standing the abuse so well that engineers predict it will last at least two more years.

Where to buy: Your B.F.Goodrich distributor has exact specification for the B.F.Goodrich suction hose described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-156, Akron 18, O.*

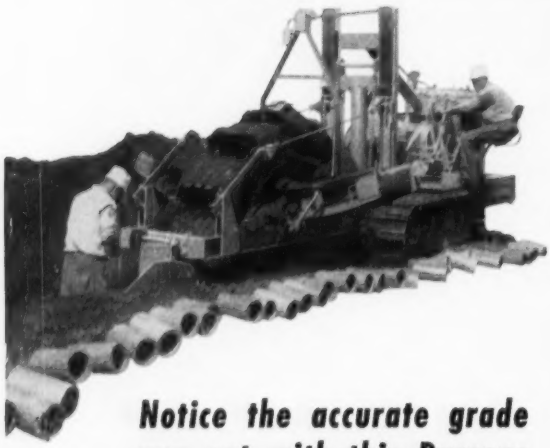
B.F.Goodrich

INDUSTRIAL PRODUCTS

Down the Pipe

• This special machine, called a "Pipemobile," runs right into a big concrete pipe section, lifts it, and hauls it away. American Pipe and Construction Co. built the rig to place the 4,000 pipe sections that will go into the second barrel of the Colorado River Aqueduct in California. Pipe sections are 16 ft long, weigh between 62 and 68 tons, and have an outside diameter of nearly 16 ft. Operator drives the Pipemobile into a pipe section and lowers a set of wheels in front to pick up the pipe and carry it down the trench. It sets each section squarely in place in the line.

Digs up to 25 FEET per minute



Notice the accurate grade you get with this Parsons 150 wheel-type Trenchliner

For pipeline, drainage, irrigation and utility trenching, Parsons 150 Trenchliner brings you big work capacity and precision grading accuracy. It digs from 12 inches to 25 lineal feet of trench per minute. 30 digging feeds assure maximum trench production at every depth, width, and in all soil conditions. Cutting widths range from 16 to 26 inches. Maximum digging depth is 5¾ feet.

Hydraulic wheel-hoist gives smooth, positive control of trench depth. A hydraulic ram on vertical mast raises and lowers the digging wheel — maintains close grade tolerance, an important advantage on any trenching job. A separate hydraulic ram tilts the mast — balances weight of wheel forward on the machine when traveling, loading or unloading on trailer.

For digging dry or wet materials, quick-change buckets on the Parsons 150 Trenchliner are available with gumbo lips, or self-sharpening reversible "Tap-In" teeth. Shiftable, reversible belt conveyor gives controlled discharge, places spoil bank on either side of trench. Tile-laying box and chute (optional) save time and labor on drainage jobs. To suit varying job conditions, this 150 Trenchliner is also available with 16-inch, lug-type crawlers, or 12-inch crawlers with street shoes. Your Parsons distributor has more information that will interest you. See him soon, or write for bulletin.

. . . . *Send to:* **PARSONS CO.,** **Newton, Iowa** . . . .

for bulletin on 150 wheel-type Trenchliner

NAME_____

COMPANY_____

STREET_____

CITY, STATE_____

CME

(Koehring Subsidiary) **PARSONS TRENCHLINERS®** CP534

OTHER SIZES of Parsons Trenchliners include wheel and ladder types, crawler-mounted, and utility-size rubber-tired Trenchmobile.

Bearings packed only once a year on this 4-PM mixer

For more work-time, less maintenance, check this Kwik-Mix 4-PM plaster-mortar mixer. There is no daily lubrication required on the antifriction paddle-shaft bearings. They are packed in grease, multiple sealed. You'll also like the simple de-clutching arrangement on V-belt drive, 4 self-cleaning blades, optional rubber tips. Has 38-inch charging height, 29-inch width, all-welded frame. Kwik-Mix 6-PM, 9 -PM sizes also available.

KWIK-MIX • Port Washington, Wis.
(Koehring Subsidiary)

Portable batch plant or cement transfer plant

Johnson Elevating Charger unloads cement from box cars or hopper-bottom cars, and loads into trucks. Charger has a 1000-lb. cement weigh batcher, hung under a 33-bbl. overhead storage hopper. Or, to charge dual-batch trucks, two 1000-lb. batchers can be used. It's easily changed to cement transfer plant by removing batchers, cone, and bolting a 50-bbl. extension section to the upper hopper. See your Johnson distributor.

C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)

20 feet deep with Koehring ¾-yd. 305

On hoe applications, Koehring 305 digs 20 feet below grade, and up to 40 inches wide over side-cutters. ¾-yard dipper pulls up close to the boom, avoids spillage. There's better than 12½-foot clearance at beginning of dump for loading into trucks. It's a versatile, big-capacity machine — readily converts to ¾-yd. shovel, ¾-yd. to 1-yd. clamshell or dragline, and 15-ton crane on crawlers. Truck-mounted 305 has 25-ton lift capacity.

KOEHRING Company
Milwaukee 16, Wis. A61

Leading contractors say... K-45 KOMPACTOR most *profitable* to own

From all over the nation come new contractor reports that Buffalo-Springfield's K-45 Kompactor is *regularly* saving 50% or more over normal compaction time and costs. These records show that regardless of widely varied materials—K-45 compaction is faster, better and more efficient than was previously thought possible.

Such outstanding results come from the Kompactor's "Interrupted Pressure" principle of compaction . . . its fast speeds of 5 to 6 mph, self-propelled, in either direction . . . its high maneuverability . . . and its ability to work right up close to curbs, culverts and abutments to eliminate costly hand-tamping. These are a few of the K-45's superior performance features that *give* more to *get* more than with any other method.

Before you bid another compaction job, check on the K-45 with your nearest Buffalo-Springfield distributor. Let him show you how the K-45 does more work per day per dollar, brings you more profit. Ask him, too, for Bulletin S-67-455, or write today for complete information on this better, exclusive compaction machine. There's nothing else like it available.

Here, the K-45 Kompactor works up close—eliminates hand tamping on this California job.

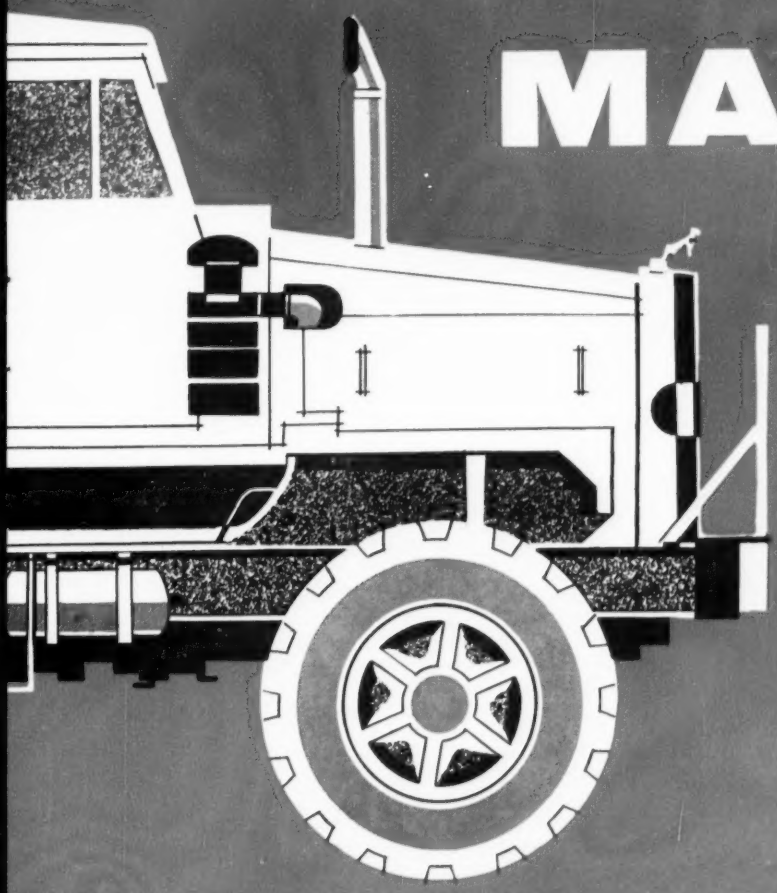
The K-45 Kompactor meets density specifications in fewer passes, faster, and at less cost.

Compacting adobe on a fill, this K-45 speeds up work for another leading West Coast contractor.

BUFFALO-SPRINGFIELD ROLLER CO.

DIVISION OF KOEHRING COMPANY · SPRINGFIELD, OHIO

NEW MACK



heavy-duty four- and six-wheel dumpers

15- to 34-ton capacity

* LARGEST SELECTION OF HEAVY DUMPERS

Mack offers you the most complete line of dumpers for mining, quarrying, road building, construction. From heavy-duty 170 horsepower, four-wheel dumpers with 15-ton capacities to super-duty 400-horsepower, six-wheel dumpers with 34-ton capacities, Mack provides the economy and performance that can mean bigger hauling profits for you.

* CHOICE OF ENGINES

Mack offers you a choice of engines . . . Cummins diesels in the 300- and 400-horsepower class . . . or Mack Thermodyne and Cummins diesels in the 170 to 205 horsepower class. No need to alter existing maintenance facilities to handle new engine makes . . . you get the truck you want with the engine you want.

* OUTSTANDING PERFORMANCE

When you buy Macks, you know that you are getting top performance, outstanding economy, maximum dependability—qualities that have made Mack the acknowledged heavy-duty truck leader in the industry. Moreover, Mack dumpers are planned for accessibility throughout . . . engines are easily reached, no place in the suspension ever needs adjustment—these and many more Mack features reduce maintenance costs and make routine servicing easier. And in Macks, you get the finest transmissions and axles available . . . made by Mack and found only in Macks!

* COMPETITIVELY PRICED

Mack off-highway dumpers are priced right in line with competitive makes. Yet, with Macks, you get those "extras" that mean more payloads at lower hauling costs . . . cabs engineered for maximum driver efficiency . . . specially designed components with extensive use of heat-treated alloy steels . . . single-unit all-welded frames that can take plenty of hard knocks . . . outstanding performance and economy from a complete line of engines.

* STOCK DELIVERY

All 15 and 22½-ton Mack dumpers are available from stock. The units you want with the engines and transmissions you want can be supplied upon gratifyingly short notice. There are no delays, no production schedules for you to worry about. For more information on delivery, contact your local Mack Dealer or Representative.

MACK LRX

capacity: 15 tons

This four-wheel, off-highway dumper combines a big 15-ton rated capacity with outstanding maneuverability. Either a Mack or Cummins Diesel engine —along with heavy-duty clutch, 10-speed transmission, and Mack's Planidrive rear axle assembly —gives plenty of pulling power for long hauls on steep grades. Rugged, unified frame assembly, powerful air brakes, and comfortable cab with driver's position offset to the left assure the top performance and efficiency that have made the LRX a highly popular dumper in mine, quarry, and road-building operations.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:	14.00-24 Rear Tire
Wheel Base	13′ 4″
Platform	9′ 1″
Overall Width	9′ 11″
Overall Height	10′ 8″
Overall Height (Body Raised)	18′ 8″
Overall Length	24′ 7½″
Turning Circle Diam. (To outside edge of tire)	60′
Weight (Chassis, Body & Hoist)	33,000 lbs.
Payload	30,000 lbs.

ENGINE (Diesel):

Model	END 673
Make	Mack, Thermodyne
Type	Naturally aspirated
Number of cylinders	Six
Bore and stroke	4⅛″ x 6″
Piston displacement, cu. in.	672
Brake horsepower (@ 2100 r.p.m. (gov.)	170
Max. torque (@ 1200 r.p.m.	480 lb.-ft.

CLUTCH (Available with END 673 only):

Type	Mack single-plate, dry
Area of engagement, sq. in.	253

ELECTRICAL SYSTEM:

Voltage and capacity . 12 V., 50 Amp. (24 V., Starting)

TRANSMISSION:

Type	Mack selective, constant mesh
No. of speeds, forward	Ten
reverse	Two

FRONT AXLE:

Make . Mack Reversed-Elliott, drop-forged I-beam

REAR AXLE:

Make	Mack Planidrive
Drive	Dual Reduction
Final Drive (3rd reduction)	Planetary gear train within wheel hubs
Total Ratio	16.5

BRAKES (Air):

Compressor	Tu-Flo
Type	Internal expanding
Front, size	17¼″ x 5″ x ¾″
Rear, size	20″ x 7″ x ¾″
Hand, size	12″ x 5″ x ⅜″, Bendix

FRAME:

Side-members, size	12½″ x 6¼″ x ½″, wide flange I-beam, rolled section
Section modulus	60.7 (per rail)

SPRINGS:

Front, type	Semi-elliptic
Rear, suspension	Semi-rigid, axle mounted to frame

WHEELS:

Type . Cast, spoke

STEERING GEAR:

Control . Manual

TIRES:	Front	Rear
Size	12.00-24 (16P) Rib	14.00-24 (20P) Lug

CAB:

Type: Heavy-duty off-highway, closed, all-steel welded. Offset 10¼″ to left of chassis centerline provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Front and rear tow pins; air horn on cab roof; cab entrance steps and platforms; rear view mirror, left side; channel type front bumper; dual windshield wipers; vertical exhaust; stop-tail light; rim lug wrench and handle.

HOIST:

Make & model . Heil
Type-Twin, double-acting, 8″ diameter, hydraulic cylinders with 24″ stroke, 70° dumping angle.

BODY:

Type	Rock, with scoop end
Make	Heil
Capacity, line of plate	9.8 cu. yds. struck

Construction: ¼″ steel plate shell bottom; ⅜″ sides and header; ½″ wear and side bevel plates; ¼″ canopy. 3″ x 5 lb. channels between floor plates either side of a 1⅜″ edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

ENGINE (Diesel):

	NHB	ENDT 673
Model		
Make	Cummins	Mack, Thermodyne
Type	Naturally aspirated	Turbocharged
Number of cylinders	Six	Six
Bore and stroke	5¼″ x 6″	4⅛″ x 6″
Piston displacement cu. in.	743	672
Brake horsepower (@ 2100 r.p.m. (gov.)	200	205
Max. torque (@ r.p.m.	1200	1400-1600
pound-feet	537	560

CLUTCH (Included with NHB and ENDT 673):

Type	Mack two-plate, dry
Area of engagement, sq. in.	416

TIRES:	Front	Rear
Size	13.00-24 (18P) Rib	16.00-25 (20P) Lug

BODY:

Type	Flared Quarry
Make	Heil
Capacity, line of plate	11 cu. yds. struck

Construction: ¼″ steel plate shell bottom; ½″ sides; ½″ header, slope; ⅜″ header, vertical; ½″ wear plate; ¼″ canopy. 3″ x 5 lb. channels between floor plates either side of a 1⅜″ edge-grain hardwood middle section filler.

Body Equipment: (for std. and opt. bodies) (9) ¾″ x 6″ alloy wear bars; rock ejectors; ½″ alloy wear plate; horizontal bolsters (3 per side); canopy, loose for export shipment. (for std. body only); exhaust heating connections; welded-on side boards.

CHASSIS EQUIPMENT: Automatic radiator shutters; Wagner "BB" (24 hour chart 0-3500 r.p.m.) tachograph, in place of standard Tachometer; speedometer; hubodometer, left front wheel; Vickers power steering; front wheel limiting valve; hand control valve to operate rear service brakes; low air pressure indicator, Wig-Wag type; screen type radiator guard; 25,000 B.T.U. hot water cab heater with defrosters; spare rim; hydraulic jack, 20-ton; air starting; cold starting equipment; insulating dash mat.

MACK — FIRST

MACK LVX
capacity: 22½ tons

This four-wheel dumper with its 22½-ton rated capacity provides maximum payloads at minimum unit cost. Equipped with either a 300 or 335-horsepower engine, over-gear transmission with two-speed compound or torque converter, and Mack's exclusive Planidrive rear axle assembly, it is powered to give top performance under the most punishing operating conditions. All-welded, single-unit, alloy-steel frame gives LVX's stamina and rugged durability. Elbow steering column, hydraulic steering booster, two-plate air-assisted clutch, and job-engineered cab with extreme left driver position assure maximum operating efficiency. From top to bottom, this big Mack gives you the "extras" that mean minimum hauling costs.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:

Wheelbase	14' 2"
Platform	9' 11"
Overall Width	11' 2"
Overall Height	11' 4⅝"
Overall Length	26' 7½"
Overall Height (Body Raised)	21'
Turning Circle Diam. (To outside edge of tire)	62'
Weight (chassis, body & hoist)	40,800 lbs.
Payload	45,000 lbs.

ENGINE (Diesel):

Model	NHRBIS
Make	Cummins
Type	Supercharged
Number of cylinders	Six
Bore and stroke	5½" x 6"
Piston displacement, cu. in.	743
Brake horsepower (@ 2100 r.p.m. (gov.)	300
Max. torque (@ 1500 r.p.m.	818 lb.-ft.

CLUTCH:

Type	Mack Two-plate, dry
Area of engagement, sq. in.	416
Actuation	Manual, with air assist

ELECTRICAL SYSTEM:
Voltage and capacity — 12 V., 50 Amp. (24 V. Starting)

TRANSMISSION:

Type	Mack selective, constant mesh
No. of speeds, forward	Eight
reverse	Two

FRONT AXLE:
Type — Mack Reversed-Elliott, drop forged I-beam

REAR AXLE:

Make	Mack Planidrive
Drive	Dual Reduction, spiral bevel
Final drive (3rd reduction)	Planetary gear train within wheel hubs
Total Ratio	17.66

BRAKES (Air):

Compressor	Tu-Flo
Type	Internal expanding
Front, size	17¼" x 5" x ¼"
Rear, size	18" x 10" x ¼"
Hand, size	12" x 5" x ⅜"

FRAME:

Type	I-beam, wide flange
Material	Alloy steel
Side-members, size	13$^{11}/_{16}$" x 8" x ⅜" (Fabricated)
Section modulus	74.8 per rail

SPRINGS:

Front	
Type	Semi-elliptic
Suspension	Mack rubber shock insulators
Rear	
Type	Progressive rate, semi-elliptic
Suspension	Cam face slipper ends with radius rods

TIRES:

	Front	Rear
Size	14.00-24 (16P) Rib	18.00-25 (24P) Lug

WHEELS:
Type — Cast, spoke

STEERING GEAR:
Power steering assist — Vickers hydraulic booster

CAB:
Type — Heavy-duty off-highway, closed, all-steel, welded. Cab offset 10¼" to left of chassis centerline provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Screen type radiator guard; front and rear tow pins; air horn on cab roof; dual windshield wipers; two air reservoirs; rear view mirror, left side; Mack power take-off and control (not available with Allison Transmission); door in hood side for access to oil filler and dip stick; exhaust through hood with inline muffler; channel type front bumper; stop-tail light; rim lug wrench and handle.

HOIST:
Type — Twin, double-acting, outboard mounted, three section telescopic cylinder assembly directly connected to body and chassis through a universal joint arrangement providing a 70° dumping angle.

BODY:

Type	Rock, with scoop end
Make	Heil
Capacity, line of plate	14.8 cu. yds. struck

Construction: ¼" steel plate shell bottom; ⅜" sides and header; ½" wear and side bevel plates; ¼" canopy. 3" x 7.1 lb. channels between floor plates either side of a 2" edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

ENGINE:

Model	NRTO
Make & type	Cummins, turbocharged
Number of cylinders	Six
Bore and stroke	5½" x 6"
Piston displacement, cu. in.	743
Brake H.P. (@ 2100 r.p.m. (gov.)	335
Max. torque (@ 1500 r.p.m.	900 lb.-ft.

TRANSMISSIONS:
Westinghouse Converter and Mack 4-Speed Transmission. Clutch: 2-plate, 17", air actuated.
Allison Torqmatic Converter and Allison Transmission.
Twin Disc Converter and Mack 4-Speed Transmission.

FRONT AXLE: Special Heavy-duty, Reversed-Elliott, Drop Forged I-beam.

TIRES:

	Front
Size	14.00-24 (20P) Rib

BODY:

Type	Flared Quarry
Make	Heil
Capacity, line of plate	15.2 cu. yds., struck

Construction: ¼" steel plate shell bottom; ½" sides; ⅜" header; ½" wear and side bevel plates; ¼" canopy. 3" x 7.1 lb. channels between floor plates either side of a 2" edge-grain hardwood middle section filler.

Body Equipment: (for std. and opt. bodies): (9) ¾" x 6" alloy wear bars; rock ejectors; horizontal bolsters (3 per side); canopy toe board; rock guards over tires; canopy, loose for export shipment; (for std. body): welded-on side boards; exhaust heating connections.

CHASSIS EQUIPMENT: Air starting, Ingersoll-Rand 9HP; Tachograph, Wagner "BB" (24 hour chart 0-3500 r.p.m.) in place of standard Tachometer; Wig-Wag low air pressure indicator; hand control valve to operate rear service brakes; front wheel brake limiting valve; 25,000 B.T.U. hot water cab heater with defrosters; windshield fan mounted on windshield header; hub-odometer; engine chrome cylinder liners and stellite inlet valve seats; insulating dash mat; fender to bumper treads; air operated radiator shutter; air operated Thermo-controlled radiator fan hub; speedometer; back-up light; hydraulic jack; 30-ton; spare rims.

NAME FOR TRUCKS

MACK LRSW

capacity: 30 tons

Powered by either a 300 or 335-horsepower engine, this 30-ton, six-wheel dumper has what it takes for off-highway operation in mines, quarries and earth-moving projects. Smooth application of power to its balanced, four-wheel drive bogie is obtained by an air-assisted clutch and overgear transmission with two-speed compound or torque converter.

Convenient location of controls, angle steering column, hydraulic steering booster, and extreme left driver position give easy and efficient handling. Best materials, precision manufacture, and specially engineered components make the LRSW capable of withstanding the toughest 'round-the-clock hauling.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:

Wheelbase	16' 10"
Platform	14' 11½"
Overall Width	11' 2⅜"
Overall Height	11' 6½"
Overall Length	29' 2⅛"
Overall Height (Body Raised)	24' 10"
Turning Circle Diam. (To outside edge of tire)	78'
Weight (chassis, body & hoist)	60,000 lbs.
Payload	60,000 lbs.

ENGINE (Diesel):

Model	NHRBIS
Make	Cummins
Type	Supercharged
Number of cylinders	6
Bore and stroke	5¼" x 6"
Piston displacement, cu. in.	743
Brake horsepower (@ 2100 r.p.m. (gov.)	300
Max. torque (@ 1500 r.p.m.	818 lb. ft.

CLUTCH:

Type	Mack two-plate, dry
Area of engagement, sq. in.	416
Actuation	Manual, with air assist

ELECTRICAL SYSTEM:

Voltage and capacity	12 V., 50 Amp. with 24 V., starting

TRANSMISSION:

Type	Mack two-lever, Duplex
No. of speeds, forward	Eight
reverse	Two

FRONT AXLE:

Type . . . . Mack Reversed-Elliott, drop-forged I-beam

BOGIE:

Make	Mack Planidrive
Final drive, type	Four-wheel, planetary
Inter-axle differential, type	Mack concentric cam and plunger Power Divider
Carriers	Mack Dual Reduction
Total Ratio	18.18

BRAKES:

Type and actuation	Internal expanding, inclosed, air
Front, size	17¼" x 5" x ¾"
Rear, size	20" x 7" x ¾"
Hand, size	12" x 5" x ⅜"

FRAME:

Type	I-beam, wide flange
Material	Alloy steel
Side-members, size	13 ⅜" x 8" with ⅝" web and top flange, ⅞" bottom flange
Section modulus	84.5 per rail

SPRINGS:

Type, front	Semi-elliptic
rear	Semi-elliptic, inverted
Suspension, Mack	Rubber Shock Insulators

SHOCK ABSORBERS, FRONT:

Type . . . . Houdaille, hydraulic

TIRES (Lug):	**Front**	**Rear**
Size	14.00-24 (20P)	16.00-25 (20P)

WHEELS . . . . Cast, spoke

STEERING GEAR:

Power steering assist . . . . Vickers hydraulic booster

CAB:

Type . . . . Heavy-duty off-highway, closed, all-steel, welded. Offset 10¼" to left of chassis center-line provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Hubodometer; screen type radiator guard; front and rear tow pins; air horn; rear view mirror, left side; exhaust through hood with in-line muffler; channel type front bumper; door in hood side for access to oil filler and dip stick; insulating dash mat; wig-wag low air pressure indicator; windshield wipers; stop and tail light; back up light; rim lug wrench and handle; automatic radiator shutters.

HOIST:

Make	Heil

Type—Twin, double-acting, 10" diameter, hydraulic cylinders with 40" stroke, 70° dumping angle with power return.

BODY:

Make and type	Heil, Rock-scoop end
Capacity, line of plate	21 cu. yds.

Construction: ¼" steel plate shell bottom; ⅜" sides and header; ¾" slope section; ¼" alloy wear and side bevel plates; ¼" canopy. 3" x 7.1 lb. channels between floor plates either side of a 2" edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

ENGINE:

Make and model	Cummins, NRTO
Number of cylinders	Six
Bore and stroke	5¼" x 6"
Piston Displacement cu. in.	743
Brake horsepower (@ 2100 r.p.m. (gov.)	335
Max. torque (@ 1500 r.p.m.	900 lb.-ft.
Turbocharger	Turbine, exhaust driven

TRANSMISSIONS:

Westinghouse Converter and Mack 4-Speed Transmission. Clutch—2-plate, 17", air actuated.

Allison Torqmatic Converter and Allison Transmission.

WHEELS, TIRES:

Front & rear Wheels, type	Cast spoke
Tires, size	16.00-25
Ply-rating, front	20 or 24
rear	24

BODY EQUIPMENT: (9) ¾" x 6" alloy wear bars; 1" alloy wear plate; rock ejectors; horizontal bolsters (4 per side); twin body prop; rock guards over tires; exhaust heating connections; canopy, loose (for export shipment).

CHASSIS EQUIPMENT: Air starting, Ingersoll-Rand 9HP; chrome cylinder liners and stellite inlet valve seats; air operated Thermo-controlled radiator fan hub; Tachograph, Wagner model "BB" (24 hour chart 0-3500 RPM) in place of standard Tachometer; speedometer; front wheel brake limiting valve; alcohol vaporizer; cab insulated; exhaust outlet under cab suitable for attachment to body for body heating; 25,000 B.T.U. hot water cab heater with defrosters; solex glass for windshield; windshield fan mounted on windshield header; fender to bumper steel treads; two stop-tail lights; 20-ton hydraulic jack; spare rim.

MACK — FIRST

MACK LRVSW
capacity: 34 tons

The 34-ton rated capacity of this super-payload, six-wheel dumper assures minimum haulage costs for the big earth-moving jobs. Equipped with a 400-horsepower engine, four-speed overgear transmission, hydraulic torque converter or two-speed compound, and a balanced, four-wheel drive bogie, LRVSW's can negotiate severe grades fully loaded. Maneuverability and ease of handling are facilitated by such features as a hydraulic steering booster and air-assisted clutch. Heat-treated, stress-proportioned, single-unit frame gives the structural stamina needed to withstand severest operating conditions. All these features, and many more, contribute to unmatched durability and minimum haulage costs.

CONDENSED SPECIFICATIONS

STANDARD EQUIPMENT

DIMENSIONS:

Wheelbase	16' 10"
Platform	14' 11½"
Overall Width	11' 2¾"
Overall Height	11' 7⅝"
Overall Length	31' 3⅛"
Overall Height (Body Raised)	25' 2"
Turning Circle Diameter (To outside edge of tire)	78'
Weight (chassis, body & hoist)	68,000 lbs.
Payload	68,000 lbs.

ENGINE (Diesel):

Model	NVH-1200
Make	Cummins
Type	Naturally aspirated
Number of cylinders	12
Bore and stroke	5⅛" x 6"
Piston displacement, cu. in.	1486
Brake horsepower @ 2100 r.p.m. (gov.)	400
Max. torque @ 1200 r.p.m.	1,075 lb.-ft.
Fuel tank and location	150 gal., back of cab

CLUTCH:

Make	Lipe Rollway
Type	Two-plate, dry
Area of engagement, sq. in.	571
Actuation	Air

ELECTRICAL SYSTEM:

Voltage and capacity	12 V., 75 Amp.
Generator, make and type	Leece-Neville, alternator

STARTING SYSTEM:

Starting motor, type	Air
Make	Bendix-Westinghouse
Rating, horsepower	25
Cold starting aid	Ether injection

TRANSMISSION:

Type	Mack selective constant mesh
No. of speeds, forward	Four
reverse	One

TORQUE CONVERTER:

Model	Westinghouse 18"
Type	Single stage, hydraulic

FRONT AXLE:
Type — Mack Reversed-Elliott, drop forged I-beam

BOGIE:

Make	Mack Planidrive
Final drive, type	Four wheel, planetary
Inter-axle Differential	Mack concentric cam and plunger type Power Divider
Carriers	Mack Dual Reduction
Total ratio	18.18

BRAKES:

Type and actuation	Internal expanding, inclosed, air
Front, size	17¼" x 5" x ¼"
Rear, size	20" x 7" x ¾"
Hand, size	12" x 5" x ⅛"

FRAME:

Type	I-beam, wide flange
Material	Alloy steel
Side-members, size	Depth 14¼", flange width 8", flange thickness 1"
Section modulus	130.0 per side

SPRINGS:

Type	Semi-elliptic
Suspension, Mack	Rubber Shock Insulators

SHOCK ABSORBERS, FRONT:
Type — Houdaille, hydraulic

TIRES (Lug) Front and Rear:
Size — 16.00-25 (20P)

WHEELS:
Type — Cast, spoke

STEERING GEAR:

Type	Worm and roller
Power steering assist	Vickers hydraulic booster

CAB:
Type — Heavy-duty off-highway, closed, all-steel, welded. Offset 10¼" to left of chassis center-line provides clear vision for driver to rear.

CHASSIS EQUIPMENT: Screen type radiator guard; hubodometer; front and rear tow pins; air horn; rear view mirror, left side; dual exhaust through hood with inline mufflers; channel type front bumper; rim lug wrench and handle; door in hood side for access to oil filler and dip stick; insulating dash mat; windshield wipers; stop and tail light; back up light; automatic radiator shutters.

HOIST:

Make & Type	Heil, twin, double-acting, outboard mounted, four-section telescopic cylinder assembly directly connected to body and chassis through a universal joint arrangement to provide maximum flexibility.
Dumping angle	70°

BODY:

Make & Type	Heil Rock, scoop end
Capacity, line of plate	24 cu. yds. struck

Construction: ¼" steel plate shell bottom; ⅛" sides and header; ¼" alloy wear and side bevel plates; ½" front slope plate; ¼" canopy. 3" x 7.1 lb. channels between floor plates either side of a 2" edge-grain hardwood middle section filler.

OPTIONAL EQUIPMENT

TRANSMISSION (In place of 4-Speed and Westinghouse Converter):

Make & Type	Mack Two-Lever, Duplex
Speeds Forward	8
Speeds Reverse	2

TIRES (Lug) Front and Rear:
Size — 16.00-25 (24P)

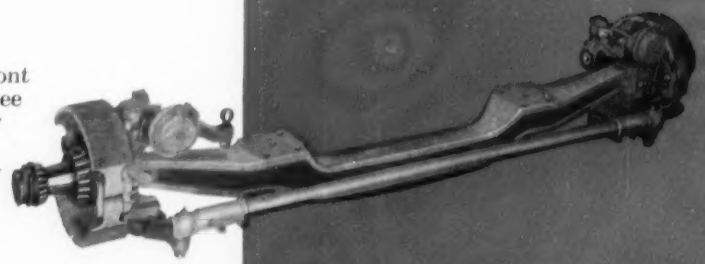
BODY EQUIPMENT: (9) ¼" x 6" wear bars over standard ⅛" alloy wear plate; 1" alloy wear plate in place of ¼" alloy wear plate; exhaust heating; rock ejectors; rock guards over tires; twin body prop; horizontal bolsters (5 per side).

CHASSIS EQUIPMENT: Air operated Thermo-controlled radiator fan hub; Tachograph, Wagner model "BB" (24 hour chart 0-3500RPM) in place of standard Tachometer; speedometer; front wheel brake limiting valve; alcohol vaporizer; 25,000 B.T.U. hot water cab heater with defrosters; solex glass for windshield; windshield fan mounted on windshield header; fender to bumper steel treads; cab insulated; two stop-tail lights; spare rim; 20-ton hydraulic jack.

only MACK gives you features like these...

MACK-BUILT FRONT AXLES

Mack's reversed Elliott, drop-forged I-beam front axles are made extra strong for long, trouble-free service. Extensive use of heat-treated steels for crucial parts means minimum maintenance. Straight tie rod and rugged construction of air-actuated brake shoes insure top performance.

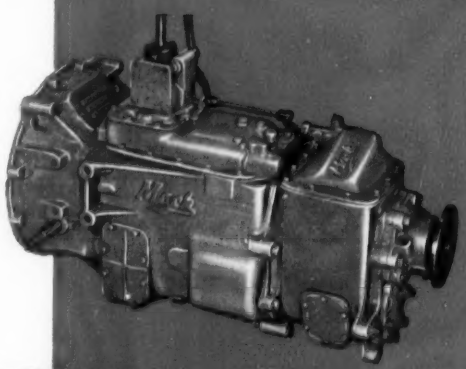


MACK-BUILT 2-WHEEL REAR AXLES

Mack's two-wheel, rear axle assemblies have an unmatched reputation for durability under strenuous service. The strongest, most wear-resistant materials are used throughout. Dual Reduction, gear-type differential and Mack's famous planetary gear reduction at the wheel hubs (Planidrive) provide the smooth distribution of power needed for top truck performance. Planetary gears can be serviced or repaired without removing tires or disturbing wheel bearing adjustment.

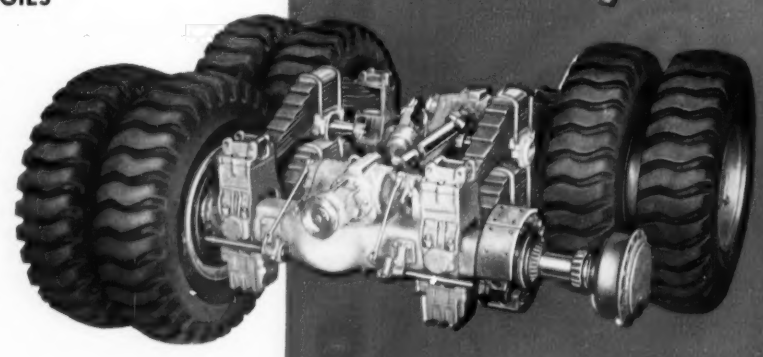
MACK-BUILT TRANSMISSIONS

Dependable performance and long life are standard in Mack transmissions. Shown here is the heavy-duty overgear transmission used for the LRVSW, LRSW, and LVX off-highway dumpers. The four-speed main transmission and two-speed compound are assembled as a unit to give eight forward and two reverse speeds. The four-speed main transmission without the two-speed compound is offered in combination with torque converter. All gears use Mack tetrapoid or quadrapoid tooth design and are drop-forged and case-hardened . . . gears noted for lasting the life of the truck.



MACK-BUILT 4-WHEEL BALANCED BOGIES WITH EXCLUSIVE POWER DIVIDER

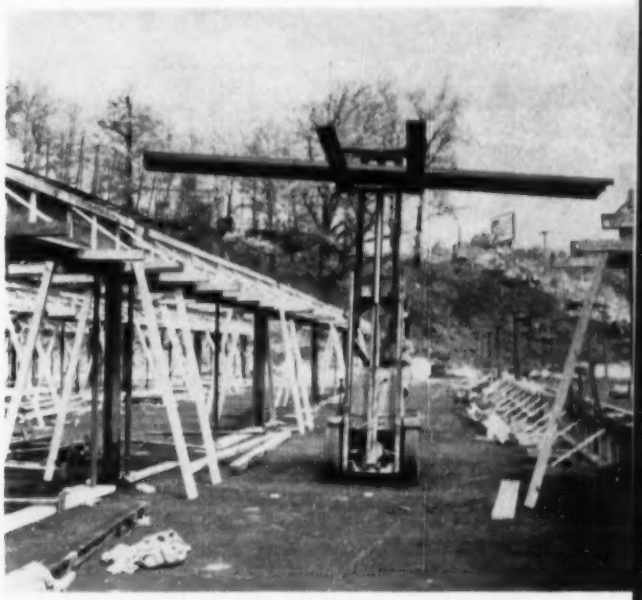
Under the worst conditions of mud, loose gravel, or difficult terrain, you get maximum pulling power with Mack's four-wheel drive Balanced Bogies because exclusive Mack Power Dividers apply power to the wheels with traction. Planidrive final reduction gears in all four hubs provide needed reduction without excessively large carriers, differentials, or axle shafts. Maintenance is reduced to a minimum.



MACK first name for TRUCKS

Mack Trucks, Inc., Plainfield, New Jersey • In Canada: Mack Trucks of Canada, Ltd.

Construction News in Pictures . . .



Low Cost Work

Fork-lift truck places lightweight steel beam that will serve as a joist between reinforced concrete girders to form the top deck of a two-level parking garage at Dover, N. J. The ends of the steel beam are embedded 3 in. into the concrete girders so that no welding is necessary. Contractor is Unit Frame and Floor Corp., New York.

Slick Method

To raise a 70-ton girder 14 stories into position, Whitehead & Kales Co. of Detroit slide the big member up the greased edges of the two columns the girder will span with a block and falls on each side. The operation was completed in less than 1½ hr. Job is Detroit Edison's St. Clair River Power Plant near Marine City, Michigan.

Double Duty

Prestressed concrete deck planks form a work platform for the last bulkhead pour on a 2,400-ft wharf at Newark, N.J. The planks later will be moved into final position. A 160S Pumpcrete machine places concrete in the forms. Stock Construction Corp. of New York is building the $7-million wharf for the Port of N.Y. Authority.

continued on page 74

here's the NEW HD-21...

DESIGNED AND BUILT TO FIT T

Now . . . major advances make the Allis-Chalmers HD-21 more productive than ever . . . capable of handling big-tractor jobs of every kind with the efficiency and dependability all contractors want and need.

New 225-net-hp turbo-engine

New weight — 45,500 lb (bare)

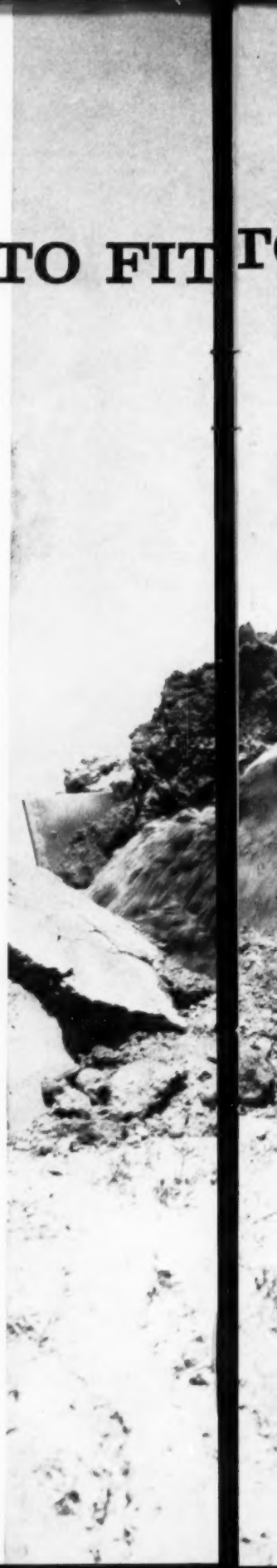
New power train and torque converter effectiveness, simplicity

New longer track for matched traction, flotation

New operating ease and control with work-saving decelerator

New heavy-duty matched dozers

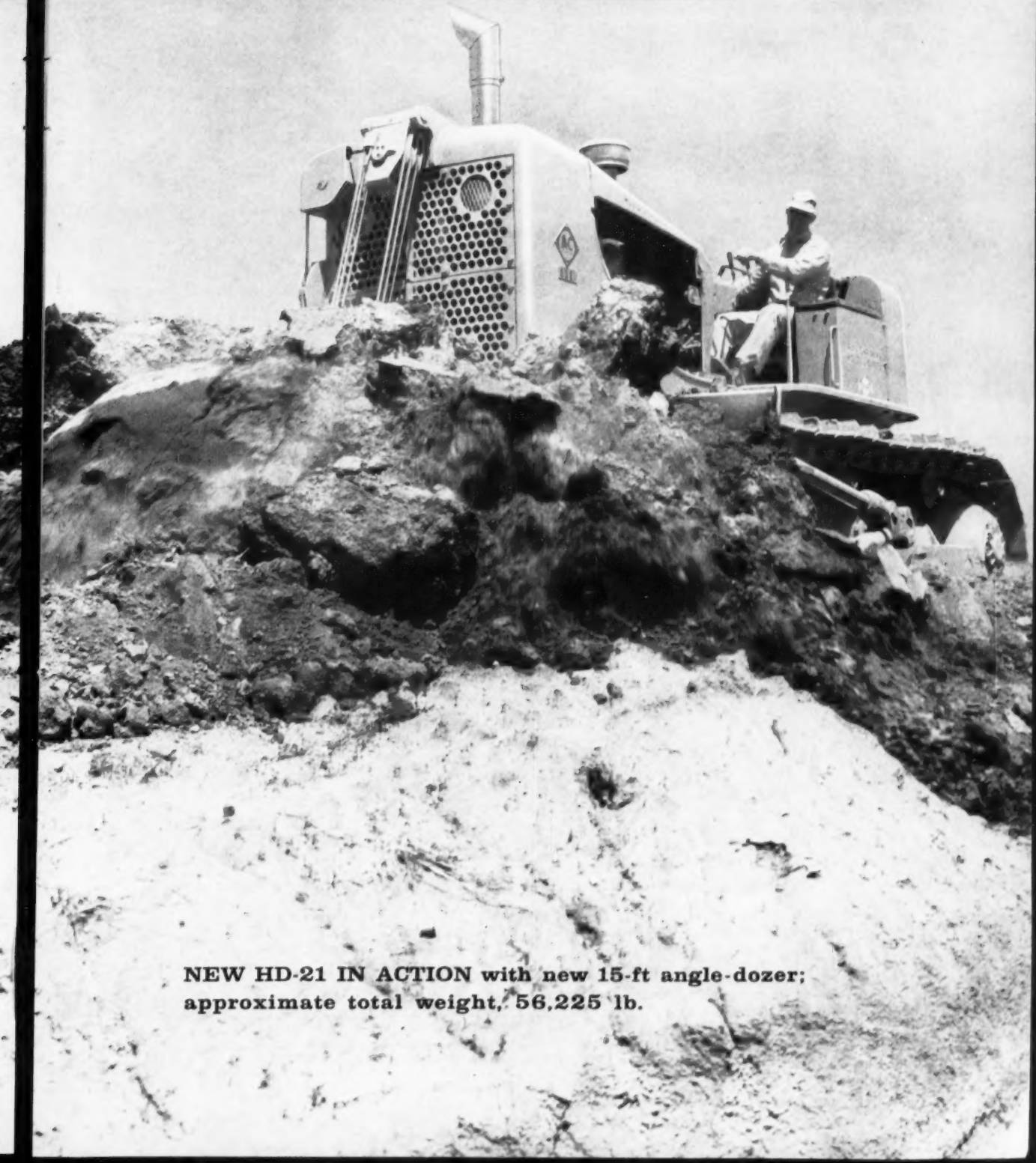
Here's a big tractor you can depend on to help you bid with confidence in your cost estimates. Your Allis-Chalmers dealer will be glad to talk to you about the new "21" . . . and to prove its value in a working demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



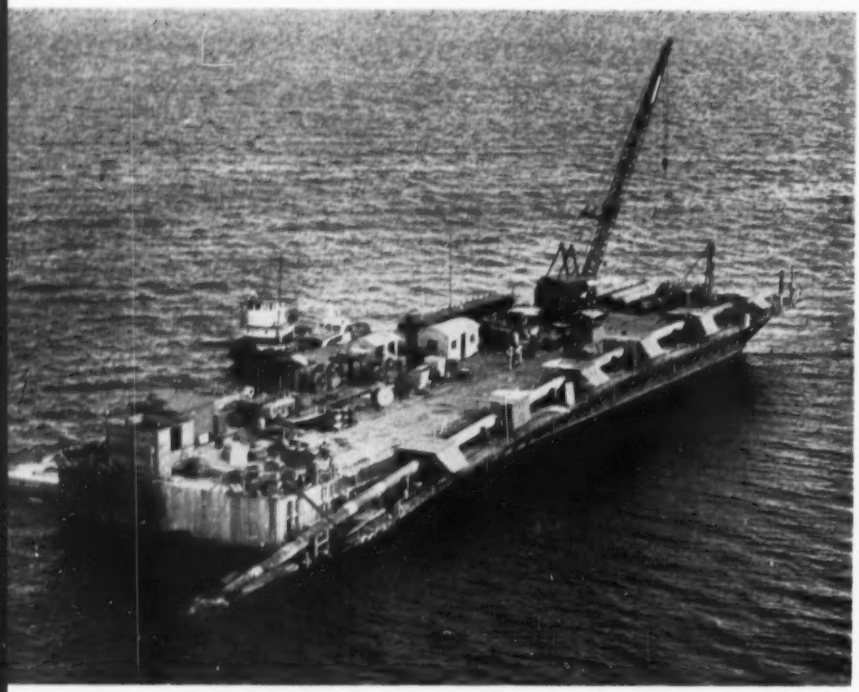
ALLIS-CHALMERS

Engineering in Action

TODAY'S BIG-TRACTOR JOBS!



NEW HD-21 IN ACTION with new 15-ft angle-dozer; approximate total weight, 56,225 lb.



Trailing a "Stinger"

Barge 300 ft long lays 2,500 ft of 26-in. concrete-coated pipe per day for a natural gas pipeline in the Gulf of Mexico. Brown & Root, Inc., works the big barge around the clock. Feature of the barge is a "stinger" developed by Brown & Root. It is a cradle with controlled buoyancy 356 ft long attached to the stern to allow the pipe to be lowered on a gentle curve so as not to crack the coating.

Space Saver

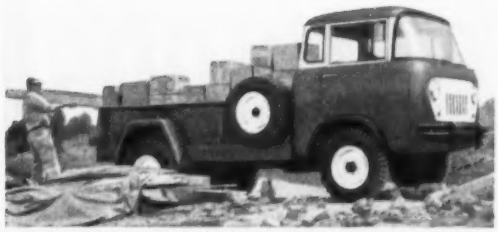
Welding large alloy steel reinforcing bars end-to-end to form continuous strands reduces the size of columns in the Borg-Warner building in Chicago by 25% in comparison with columns reinforced with carbon steel bars. George A. Fuller Co. is the general contractor. Steel supplier is Joseph R. Ryerson & Sons, Inc., of Chicago.

Easy Work

It took this International Drott TD-9 Skid-Shovel only 15 min to wreck an old garage by hooking its bucket under one corner, lifting the end, and letting the building crash to the ground. S. G. Lowendick and Sons holds a contract to demolish more than 100 buildings to make way for a new $15-million thruway in Columbus, Ohio.

4-wheel drive traction. The rugged Universal 'Jeep'*, with the extra traction of its 4-wheel drive, is an all-purpose workhorse, whether providing transportation for initial surveys, taking men and tools to their assignments, or carrying supervisory personnel for inspection work. It carries 7 workers or up to half a ton of equipment and supplies, tows heavily loaded trailers on the road or off.

Why 'Jeep' versatility and all-wheel traction save time and manpower for contractors!



The new and bigger Forward Control 'Jeep' FC-170 Truck. This 7,000-lb. GVW workhorse puts a 9-ft. pickup box on a 103½-inch wheelbase. You get unequalled cargo space per inch of wheelbase, plus 'Jeep' maneuverability to carry payloads up to 3500-pounds almost anywhere, in good weather or bad.

Mobile power. The 'Jeep' Truck, with hydraulically-operated back hoe, digs foundations, laterals or drainage ditches and does other time and money-saving jobs. It fills the gap between hand digging and heavy-duty earthmoving equipment.

In their weight class, 'Jeep' vehicles are the *only* vehicles originally designed and engineered completely for 4-wheel drive, off-the-road use. That's why they're matchless for year 'round construction operations, in good weather or bad.

These versatile vehicles have proved their all-around mobility and wide range of performance on countless construction projects! Their rugged functional design stands up to the toughest use—and the extra traction of their time-tested and performance-proved 4-wheel drive takes them up steep grades—through mud, sand and soft earth—anywhere they have to go in or around the construction site. For highway travel they shift easily into conventional 2-wheel drive. And with power take-off they operate many types of equipment from winches to back hoes.

Multi-purpose 'Jeep' vehicles supplement heavy-duty equipment, spread their costs over a wide variety of jobs, give you additional savings through long life and low maintenance costs. Ask your Willys dealer for a practical, on-the-job demonstration.

The 'Jeep'®

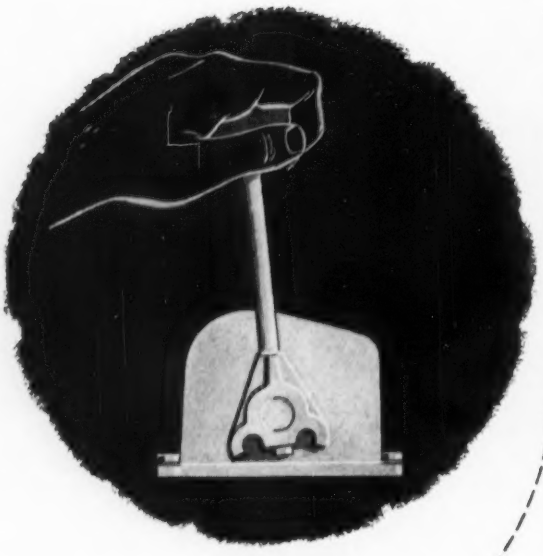
family of 4-Wheel-Drive vehicles

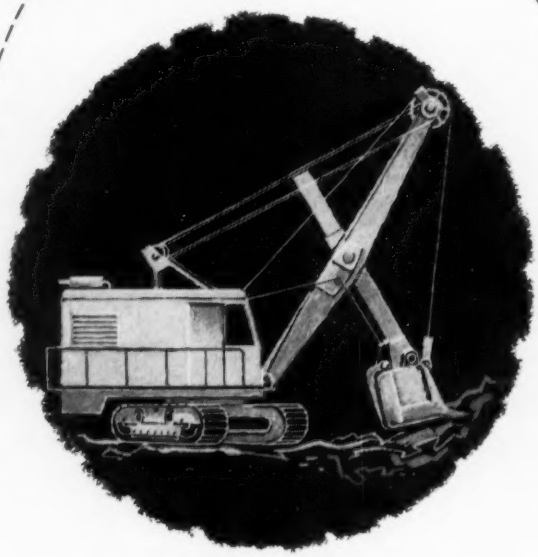
WILLYS... makers of time-tested utility vehicles

*Model CJ-5 shown

WILLYS MOTORS, INC., TOLEDO 1, OHIO

SHOVELS





Control them all with WESTINGHOUSE

HERE'S WHY you need Westinghouse Pneumatic Control on heavy-duty earth moving equipment.

You need it because you need controls that are *safe*—that present no fire hazard, that can be designed to prevent unsafe operating procedures.

You need it because you need controls that are easy to operate yet give the operator the "feel" of the machine.

You need Westinghouse Pneumatic Control because shovels, hoists, draglines, backhoes, and similar equipment require controls that are durable and reliable in hard service . . . that are built simply so that ordinary mechanics can service them.

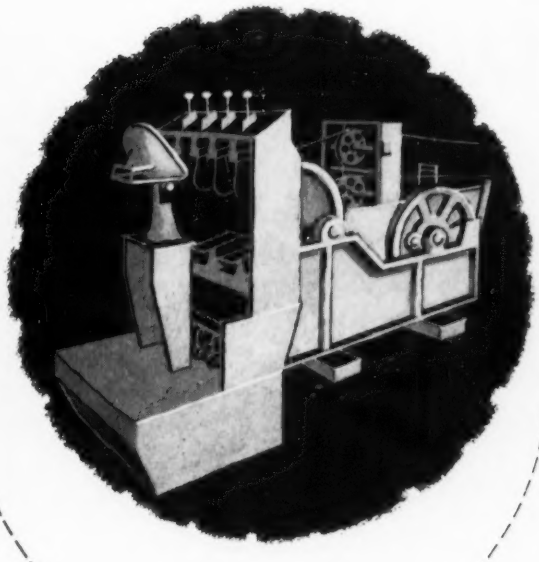
You get all these benefits, and more, when you specify Westinghouse Pneumatic Control. You also get competent engineering assistance based on 89 years of experience in pneumatic applications. You get a complete line of controls from one reliable manufacturer. And you get parts or factory service throughout the world from Westinghouse and its affiliated companies overseas.

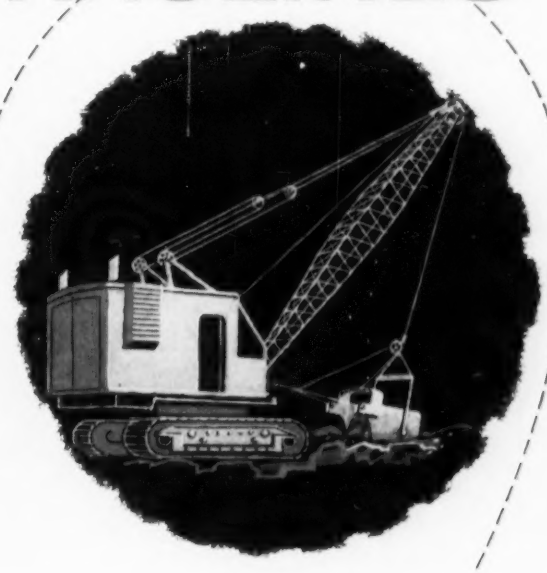
Send the coupon for more information on modern uses for pneumatic control.

89 YEARS OF PNEUMATIC ENGINEERING EXPERIENCE

HOISTS

DRAGLINES





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FREE PNEUMATIC CONTROL DATA—Here, in this new booklet, you will find basic fundamentals of pneumatic control engineering written clearly, concisely and with the authority of Westinghouse's 89 years of experience in this field. Send the coupon for a free copy. We'll also send you examples of recent applications of Westinghouse Pneumatic Control—applications which will show you the versatility of modern pneumatic control.

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Industrial Products Division, Dept. CM-107
Wilmerding, Pennsylvania

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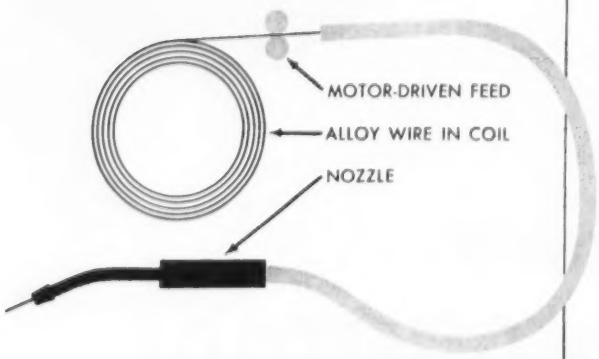
Advertisement

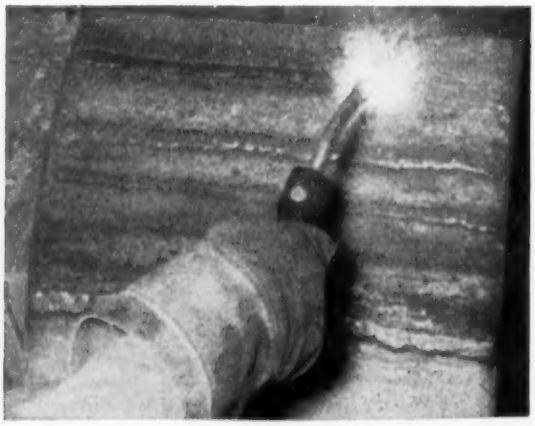
WHAT IS *SEMI-AUTOMATIC* HARD-FACING?

Here is one of industry's newest maintenance tools used to radically reduce hard-facing costs. It is simple, highly versatile and can be installed at moderate price.



Semi-automatic hard-facing is a process which combines the high deposit rates of automatic welding with the positioning and setup convenience of the manual method. It utilizes a complete series of Stoody fabricated tubular wires containing alloys that meet all hard-facing requirements. These wires, supplied in layer wound coils, are mechanically fed to the nozzle by the semi-automatic welding machine. The weldor merely directs the arc as the metal is deposited on the work, the machine automatically starting the wire feed when the arc is struck, stopping it when the arc is broken. Numerous advantages result when rebuilding and maintaining equipment in all types of heavy industry.

Repointer welded on with Stoody Nickel Manganese and entire tooth hard-faced with Stoody 121



Roll brought up to size with Stoody Nickel Manganese and corrugations rebuilt with Stoody 100

HIGH WELDING SPEEDS—Two to four times faster than the manual method at correct welding amperages, semi-automatic hard-facing effects enormous savings in time. Penetration of the base metal and dilution of the deposit are reduced, with lower heat input, all highly desirable features of this process.

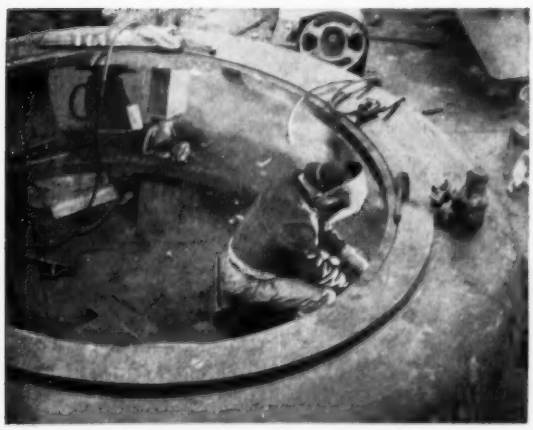
FULL VISIBILITY—No submerging flux is required; the weldor enjoys complete visibility of the weld at all times. Flux dams are unnecessary.

NO STUB END LOSSES—Wires are supplied in continuous coils. There is no stub end waste nor time lost in changing electrodes.

SEMI-AUTOMATIC MACHINES—Now supplied by a number of manufacturers, all can be used satisfactorily with Stoody semi-automatic wires with minor conversions consisting of wire guides, nozzle and nozzle tip. Conversion kits are available from all Stoody distributors.

WHERE CAN SEMI-AUTOMATIC HARD-FACING BE ECONOMICALLY USED?—In general, almost any work now hard-faced manually can be completed faster and cheaper semi-automatically with deposits having wear resistance usually superior to manual electrodes of similar analysis. The illustrations are typical of current semi-automatic applications.

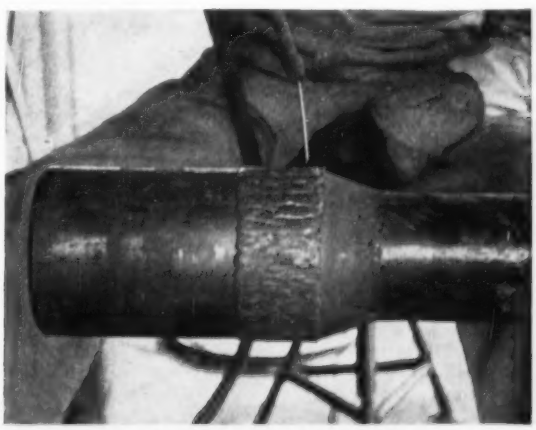
Write for circular. Contains a full description of present Stoody semi-automatic wires and typical applications.
Available from your Stoody dealer.
Check the "Yellow Pages" of your phone book or write direct.



Dredge pump casing hard-faced with a combination of Stoody 121 and Stoody 100

Shovel track pads rebuilt with Stoody Nickel Manganese

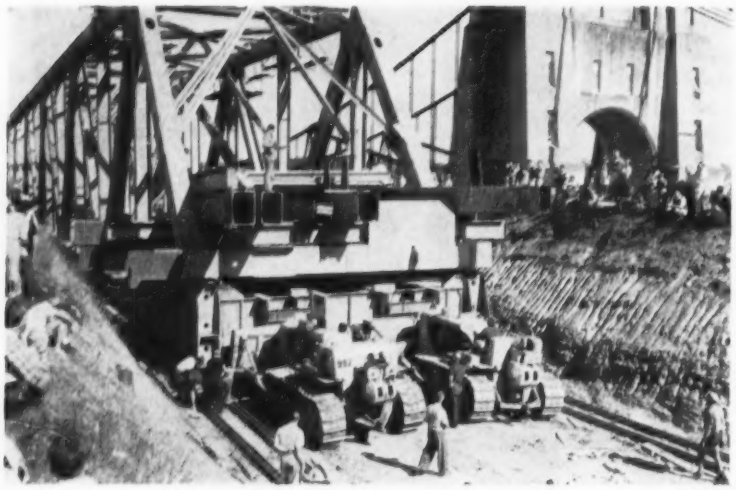
Mill hammers brought up to size with Stoody Nickel Manganese, using copper form, then hard-faced with Stoody 100



Tool joints hard-faced with Stoody 130 or Stoody 100

STOODY COMPANY
11972 EAST SLAUSON AVENUE
WHITTIER, CALIFORNIA

Construction 'Round the World . . .



In Australia

It's a novel way to place a bridge span—with tractors. But that's the way Electric Power Transmission Pty. Ltd., put in place a 620-ton span in Queensland. They positioned a hulk under one end of the span at low tide, attached the span to the hulk at high tide, and pushed it across to the central concrete caisson with two Cat D8's.

In Canada

At Chute-des-Passes, Quebec, Perini-McNamara-Quemont is driving a 6-mi tunnel from four headings for a $125-million hydroelectric power project of Aluminum, Ltd. Working two shifts, tunnel crews push ahead almost 200 ft per week at each heading. Trucks like this Athey PR-19 remove 6,500 yd of muck per week from each heading.

In Africa

Lima crane with lifting beam from which two pneumatically operated arms are suspended picks up wagons of rock and dumps them to form a breakwater for a new harbor at Tema in Ghana. The work is being carried out by the British firm Parkinson Howard. Air rams were manufactured by Consolidated Pneumatic Tool Co., Ltd.

ALL OPERATIONS ARE COMPLETELY INDEPENDENT—In addition to eliminating shifting time, *Independent-Travel* allows the operator to swing and hoist the load while travelling. Whether to save time or to jockey the boom around obstacles, the operator can swing the boom while his machine is travelling in either direction. This optional feature can be used with any front-end attachment.

Getting 9 hours' output in 8

Independent-Swing-and-Travel is available on 11 Link-Belt Speeder models. Eliminates shifting . . . saves 20-30 seconds each move

Link-Belt Speeder users are setting new high-production standards by equipping their machines with *Independent-Swing-and-Travel*. Why? It eliminates time losses ordinarily occurring when the operator shifts from swing to travel and from travel to swing. With *Independent-Travel* shifts are eliminated and the machine can swing and travel simultaneously . . . you can jockey the boom around obstacles in tight quarters, move away from bank cave-ins in split seconds!

If you'd like complete details, proof that *Independent-Travel* can up output . . . cut maintenance and spare parts costs, too — see your Link-Belt Speeder distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

MORE USABLE HORSEPOWER — Size for size, Link-Belt Speeder shovel-cranes utilize more of the engines' available horsepower. This bonus pays off in added power at the bucket teeth, greater line pull plus extra power to swing, hoist and travel. Although it gets more usable power and line pull out of the same engines used in other shovel-cranes, a Link-Belt Speeder remains well within the engine manufacturers' recommended operating speeds.

14 104 A

It's time to compare . . . with

LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

ALEMITE PORTABLE SERVICE STATIONS

help "heavyweights" work longer...do the job faster

ON NATION'S MAJOR ROAD PROJECTS!

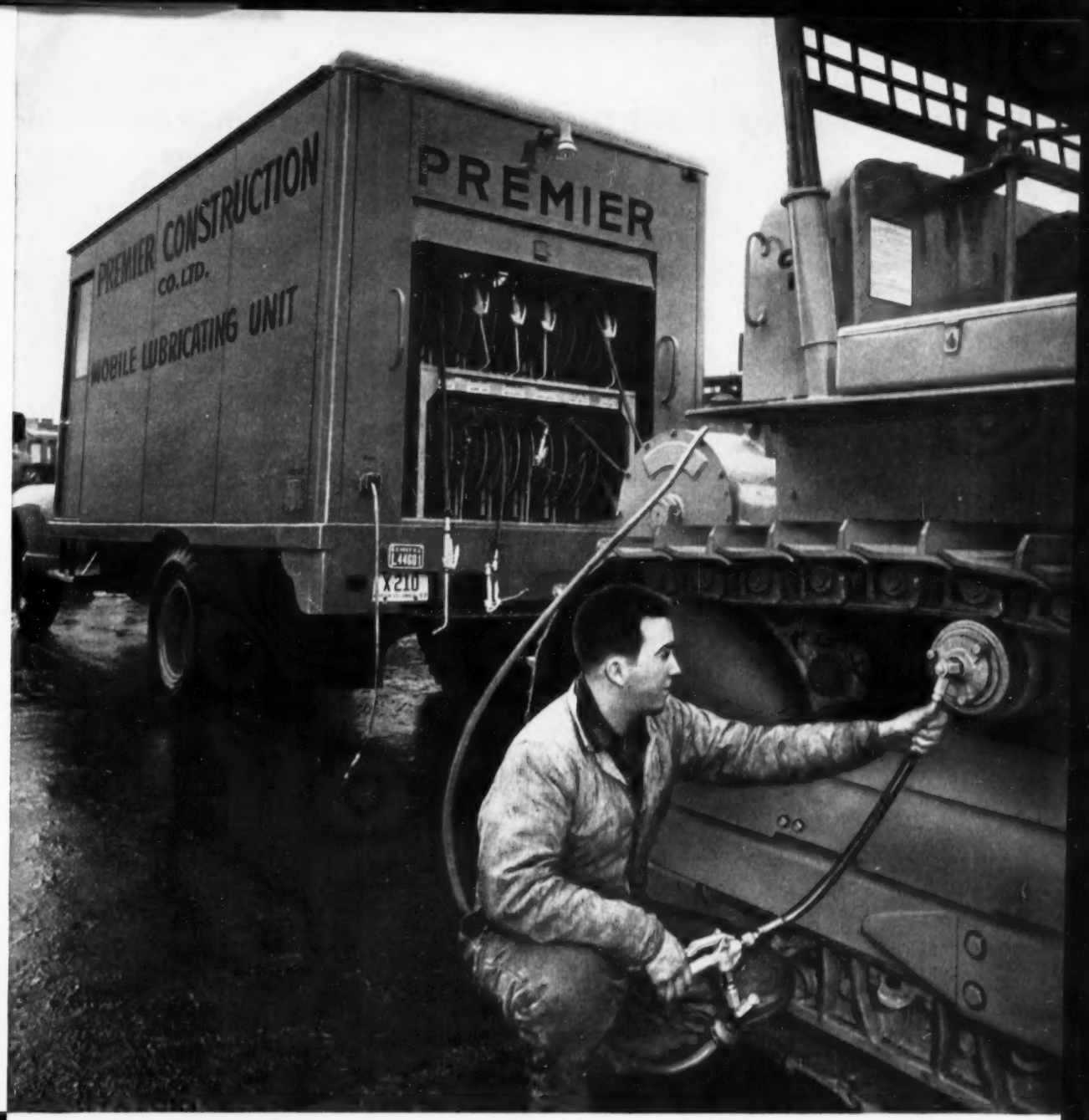
On America's great new road jobs—and in Canada, too—Alemite power lubrication rigs help leading contractors win battles against time and high maintenance costs.

64% faster than hand lubrication methods, Alemite portable power units service equipment *on the job*—wherever and whenever they are needed. They eliminate costly delays due to slower lubrication methods . . . end trips to and from the grease shop . . . reduce chance of costly bearing failures.

Whether your operation is large or small, an Alemite outfit can be custom-built from standard Alemite equipment to meet your particular needs . . . and to give you important savings in time, money and equipment.

OPEN FLAT BED—7-pump, 9-reel service station built by W. E. O'Neil Construction Company.

COMBINATION OPEN AND CLOSED UNIT—owned by Kuckenberg Construction Company, Portland, Oregon.



ALL-WEATHER VAN TYPE—used by Premier Construction Company, Ltd., British Columbia, 13 pumps, 14 reels.

ALEMITE PORTABLE SERVICE STATIONS HAVE HELPED CONTRACTORS BUILD:

Illinois Toll Road · Northern Indiana Toll Road · New York State Thruway · Chicago Congress St. Expressway · Savannah River Atomic Energy Project and many other nationally known projects!

Fast, easy lubrication of track rolls and fittings.

Quick filling of final drives, gear housings, transmissions.

No engine oil wasted — delivers exact amount of oil required.

Air line equipment for on-the-job tire inflating, air cleaning.

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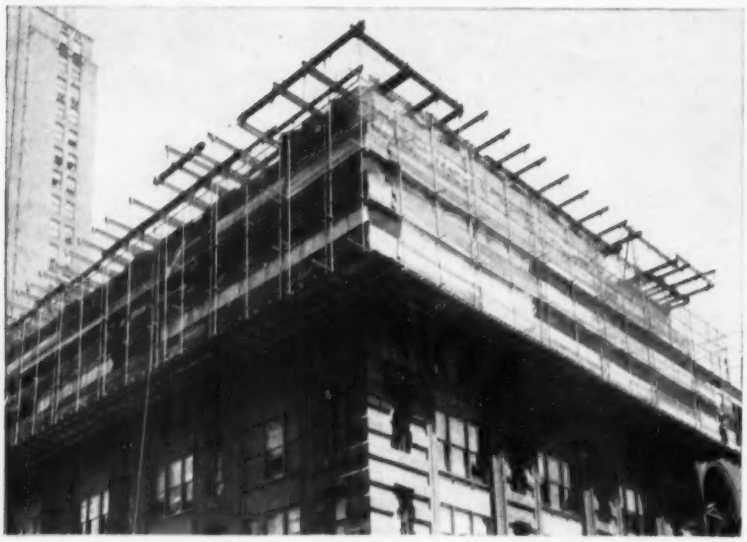
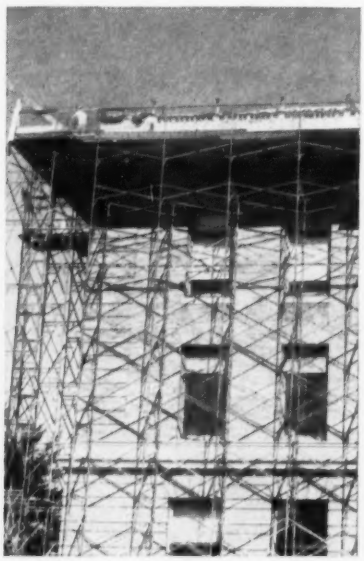
Scaffolding Methods . . . for Cornice Removal

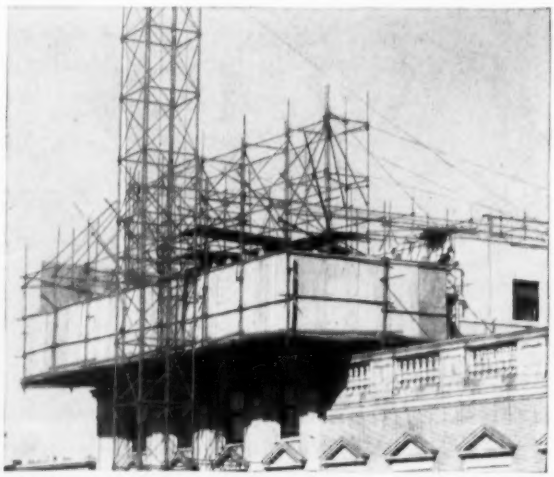


ROOF SUSPENSION—3-level hanging "TubeLox"® Scaffold helps in removal of the wide overhanging cornice and terra cotta ornamentation extending a full story and a half down from the top of the First National Bank Building in Chicago. The Leonard Construction Co., engineers and general contractors and Peter Masterson Co., sub-contractor, exposed the top flange of the roof beams and PS Co. anchored 7" double out-rigger steel I-beams to them with double beam clamps. 8,500 lineal feet of "TubeLox" Scaffolding, with canopy, suspends from the outrigger beams to provide three working levels.



FROM THE GROUND—This 350-frame "Trouble Saver"® Sectional Scaffold, built up from the ground for cornice removal on Simmons College, Boston, is used on this low building because it was the most economical and practical method. Hew Const. Co., contractor. U.L. approved.

HANGING TO THE JOB—"Gold Medal" Suspended Scaffold Machines are hung from double 7" I-beams attached at roof level for this decoration removal job on the America Fore Building, Chicago. Clarence Cross Co., contractor, finds this method to be safe and efficient in moving workmen from level to level quickly. U.L. approved.



CANTILEVER—To remove cornice from the tall Clift Hotel, San Francisco, a unique scaffold made of 11,000 lineal feet of "TubeLox" Scaffolding is cantilevered over the parapet. The scaffold is tied back each bent by roof hooks, cables and turnbuckles. Phoenix Simpton Co., contractor, also tied a 240' "Gold Medal"® Heavy Duty Hoist Tower into the scaffold and building.

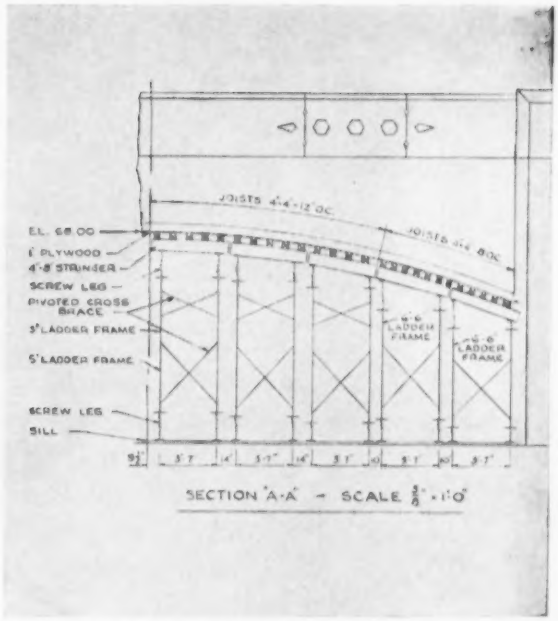
FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street Dept. C M & E Long Island City 1, N. Y.
West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.
Branches in all principal cities
***In Canada:* 355 Dufferin St., Toronto**

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

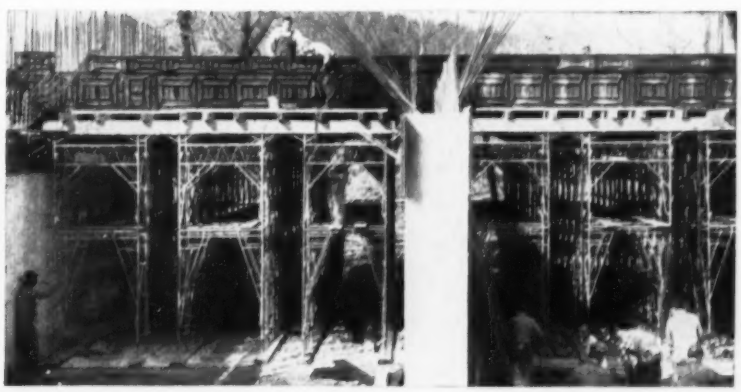
SIMPLE BRIDGE SHORING — Light-weight, easily-erected, prefab sections of "Trouble Saver" Steel Shoring eliminate heavy timbers (and cranes to handle them) for contractor, Matthew J. Reiser, Inc., on this job. 146 2'-wide ladder frames, 105 5'-wide frames and 196 14" U-heads provide ample support with minimum equipment for overpass on an exit road from the Wilbur Cross Parkway, Wethersfield, Conn.



PS Co. ENGINEERED LAYOUTS—Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell or rent* "Gold Medal"® Scaffolds. See classified 'phone directory for your local source. Included are recommendations for joists, stringers, and every component to provide the safest, most efficient and economical shoring.

Shoring Methods . . . for Highway Construction by The Patent Scaffolding Co., Inc.

DUAL PURPOSE — Here, "Trouble Saver" Scaffolding speeds erection of formwork for above-ground pier shells and supports platform for vibrating machines and workers on a New York State Thruway overpass.



CUTS SHORING COSTS 25%—Mal-Bros Co., contractor on this street relocation bridge in Scotch Plains, N. J., formerly used only wood shoring methods. On this project "Trouble Saver" Steel Shoring was used. 272 frames, quickly assembled in 3' by 5' towers and in rows spaced 2'6" apart, provide faster, easier shoring for the job. The contractor reports savings of 25%.

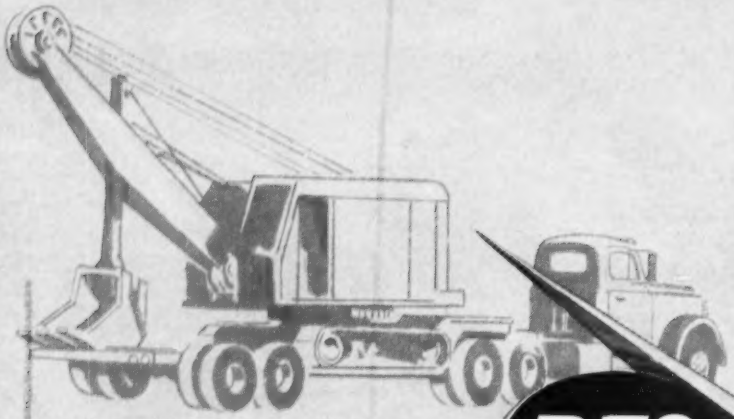
FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street Dept. CM&E, Long Island City 1, N. Y.
West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.
***In Canada:* 355 Dufferin St., Toronto**
Branches in all principal cities

GET NEW HIGHWAY BULLETIN G208 NOW!
Full details on cost-cutting ways to use steel shoring and scaffolding on road jobs.

The Patent Scaffolding Co., Inc.
38-21 12th Street, Dept. CM&E, Long Island City 1, N. Y.
Name _____
Company _____
Address _____
City _____ Zone ___ State _____

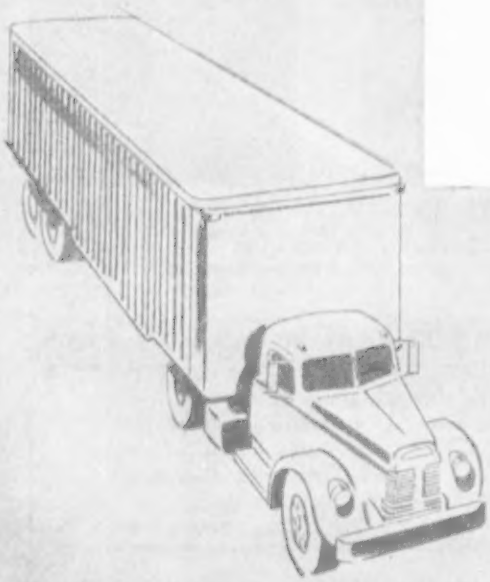


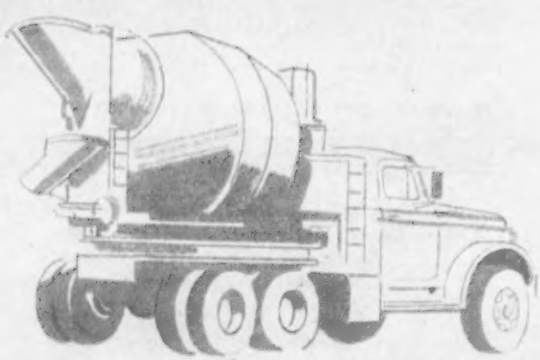
REO

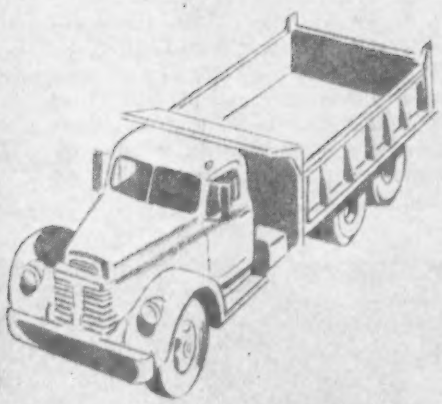
GOLD COMET SIX

from truckers who know . . .

- "In 116,000 miles, it averaged 6.5 miles per gallon."
- "It handles 40,000 gross with ease of a passenger car."
- "At approximately 122,000 miles, all that was necessary was a valve grind."







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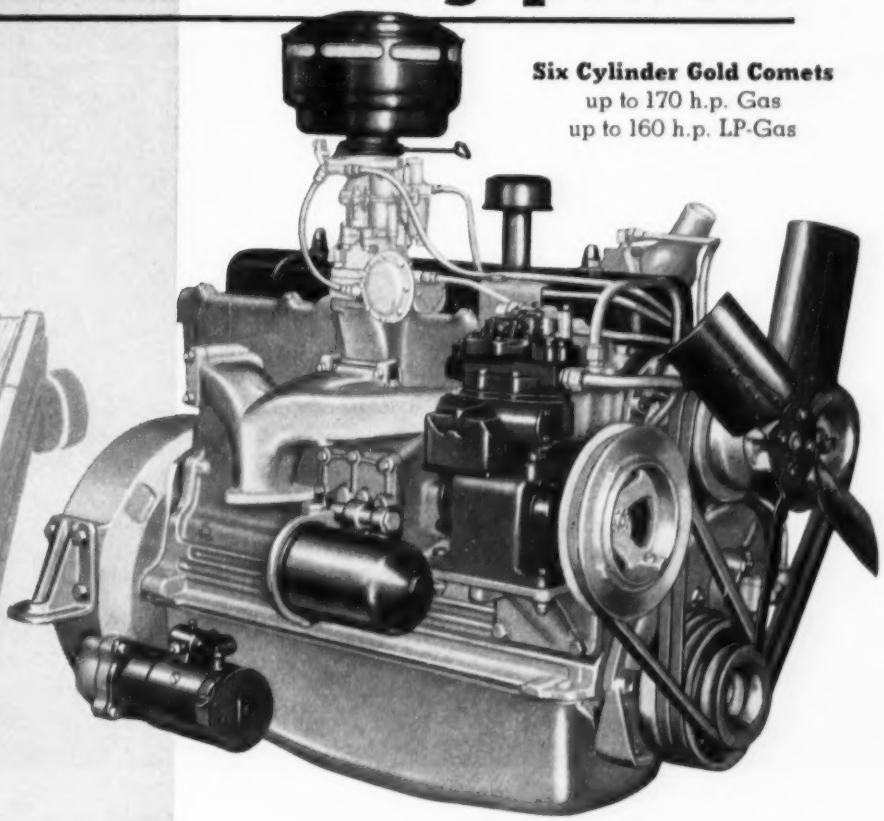

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'Faster From Foster' meant plenty on this extra-tough pile driving job

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Construction Methods AND EQUIPMENT

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HENRY T. PEREZ, Editor

Caught in the Middle

THE CONTRACTING INDUSTRY is due for some unsettling times because of organized labor. Most of the trouble is inside labor's own house, so management can be caught in a dreadful squeeze over which it has little or no control.

One of the chief unsettling influences, of course, is the struggle for power within the International Brotherhood of Teamsters. As we go to press, it appears certain that James R. Hoffa will be elected president of the union. Yet the Executive Council of the AFL-CIO has virtually ordered the Teamsters to oust certain officials, including Hoffa, who currently is under federal indictments charging wire tapping conspiracy, and perjury.

The Executive Council also adopted a damning report of the AFL-CIO's Ethical Practices Committee that indicates serious corruption and other irregular practices in the Teamsters union. Failure of the Teamsters to clear themselves of these charges, or to prove that effective measures are being taken to clean house, would result in their suspension from AFL-CIO and its Building and Construction Trades Department.

The Department already has trouble. Building Trades Councils of seven Midwestern states have asked it to consider leaving the AFL-CIO unless jurisdictional disputes between craft unions and former CIO industrial unions are resolved.

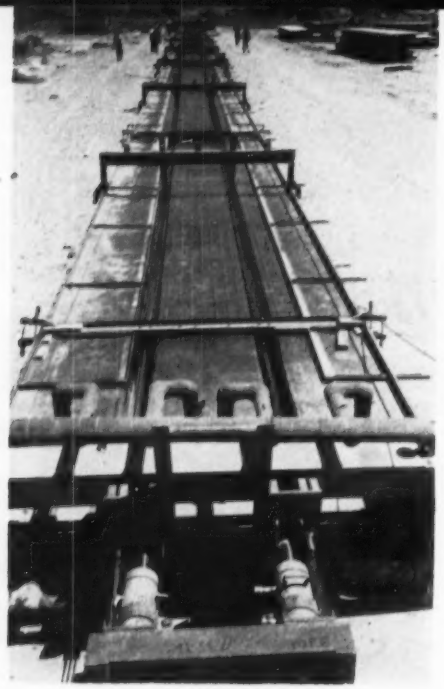
This incipient revolt is only one of many flames that have already burst forth from the simmering discontent of the craft unions at their status within a merged labor movement. And the matter certainly must come to a head no later than December 5, the deadline set by the AFL-CIO constitution for merger of unions at state and local levels.

One result of all these labor troubles may be formation of a third labor group. If the Teamsters and the Building Trades leave AFL-CIO, either by expulsion or by voluntary withdrawal, it is probable that they will join forces. In any event, chances are that the contractor will be caught in the middle.

That he realizes this is attested to by the recent formation of the National Joint Cooperative Committee of the Associated General Contractors and the Council of Mechanical Specialty Contracting Industries. One purpose of the committee is to resist giving industrial unions jurisdiction over construction of plant additions and alterations.

Says the committee: "Some problems involve issues of great importance to the national economy, transcending the immediate interest of the construction industry. . . Such a problem is created when powerful industrial unions force manufacturing companies to sign restrictive and monopolistic clauses prohibiting construction by contract, thus preventing the use of efficient, skilled construction workers and replacing them with workmen inexperienced in the construction field."

That this committee will help labor solve some of its own problems is to be hoped. And unless the Teamsters and the Building and Construction Trades Department do solve their problems, the contractor and the worker and the labor movement will all be losers.



Because this on-site prestressing bed is portable...

You CAN Take It With You

PRESTRESSING BED (left) is 300 ft long, made up of ten 30-ft sections bolted together. Bed itself takes tensioning load, eliminating abutments.

TRUCK CRANE (below) prepares to lift casting from bed. When it comes time to move bed, same American crane can handle the 3½-ton sections.

Why On-Site Prestressing?

Frank M. Hall, head of Craftsmen Construction Co., believes that precasting and prestressing of building members should be done by the general contractor, and should be conducted at the job site. Here, in his own words, is his reasoning:

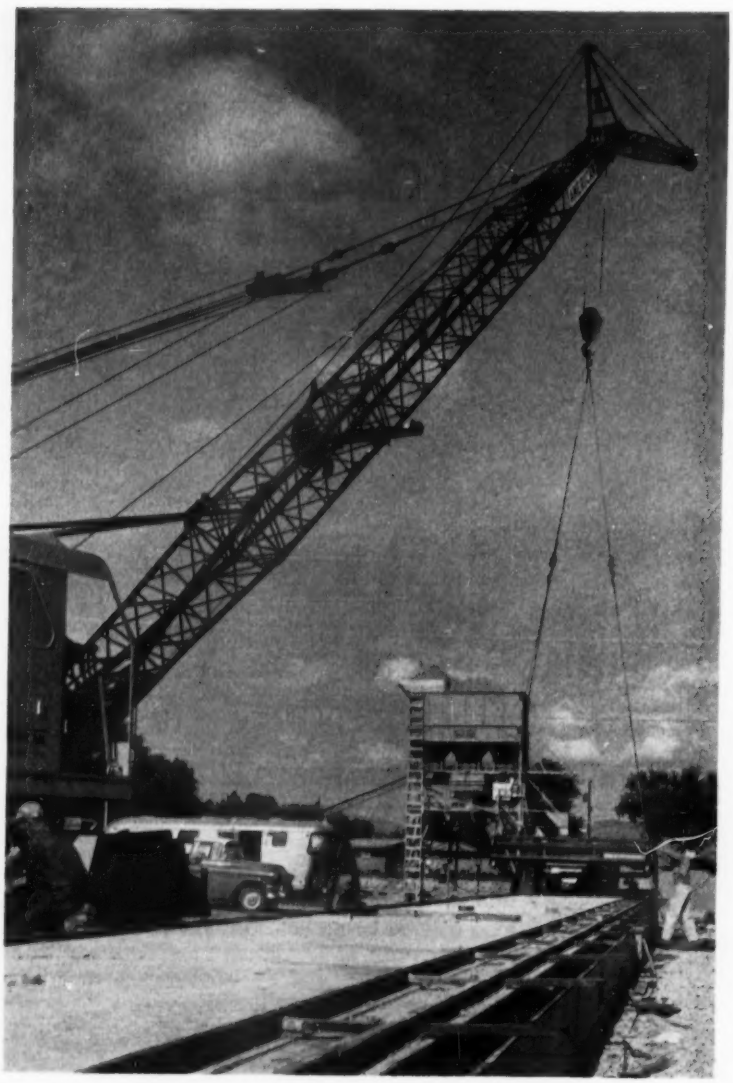
"There are distinct advantages in having the casting bed right on the job site. The work is under direct supervision of the general superintendent, the architects, and the structural engineer.

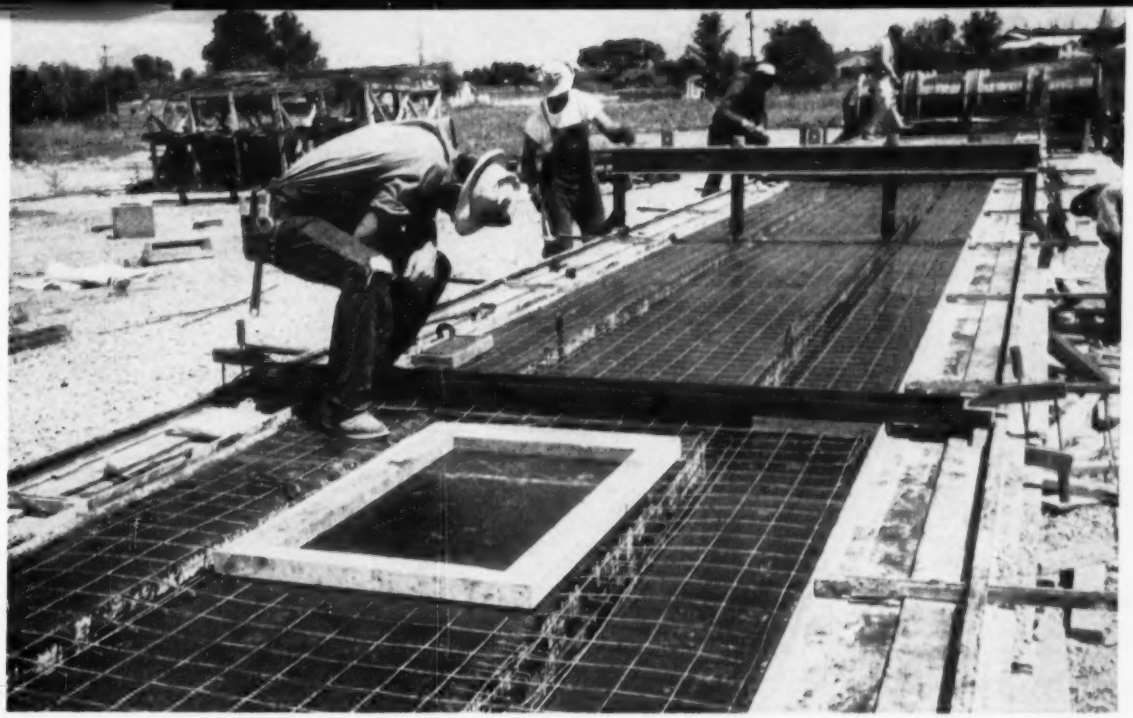
"The subcontractors are able to make blockouts and inserts in the slabs right on the job. The flexibility of the operation permits easy and quick adaptation of those special unforeseen minor variations that have to be made.

"It permits efficient scheduling. We can cast one day the slabs that'll be needed on the job the next day. There are no costly delays or rescheduling of work. The job moves smoothly.

"We feel the biggest advantage is that concrete prestressing is under our direct control, plus the obvious advantage of future use of the portable prestressing plant. We have our own trained personnel and their efficiency and capabilities rise steadily with experience.

"Another important advantage is that the prestressing plant operations do not require the full time of the workers and they can be used on other jobs around the project. That tends to offset the higher hourly wages they are paid as compared with the hourly rate at established prefabricating concrete plants."





FORMS ARE READIED for casting of double-tee members. Chair clamps hold channel that affixes bulkhead form in position, while bolts through slotted bars hold angle-iron side forms. Here, worker drills hole to hold wood filler for bulkhead.

FROM AN ON-SITE pretensioning and casting bed 300 ft long, a Colorado contractor is turning out 1,650 sq ft of prestressed concrete building components every 24 hr. And the bed is portable—it takes only about 10 hr to dismantle and re-erect it at another site. Secret of the portability is that the bed is a series of ten steel frames, each 30 ft long, bolted end to end. The frames themselves take the prestressing face so no massive end abutments of concrete and steel are required.

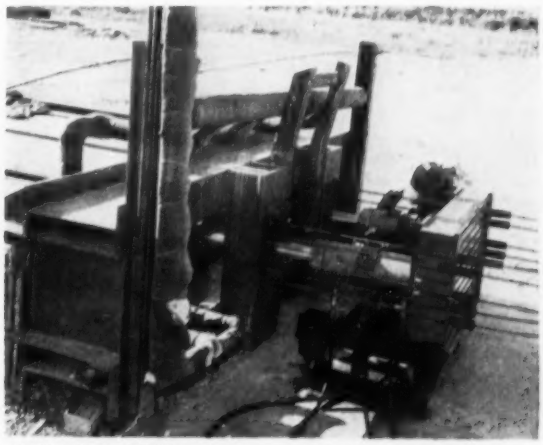
Ross H. Bryan, consulting engineer from Nashville, Tenn., designed the bed and the prestressing details for Denver's Craftsmen Construction Co., Inc. Craftsmen is building two high schools in the Denver area that require 261,000 sq ft of prestressed concrete floor and roof deck. Components are both channel and double-tee type. They vary in width from 3 ft 6 in. to 6 ft 9 in.; in over-all depth from 6 to 17 in., in slab thickness from 2 to 3 in., and in length from 15 to 52 ft.

The bed in which these varied members are cast is 300 ft long and 8 ft wide. It is designed to resist safely a 240,000-lb pretensioning load.

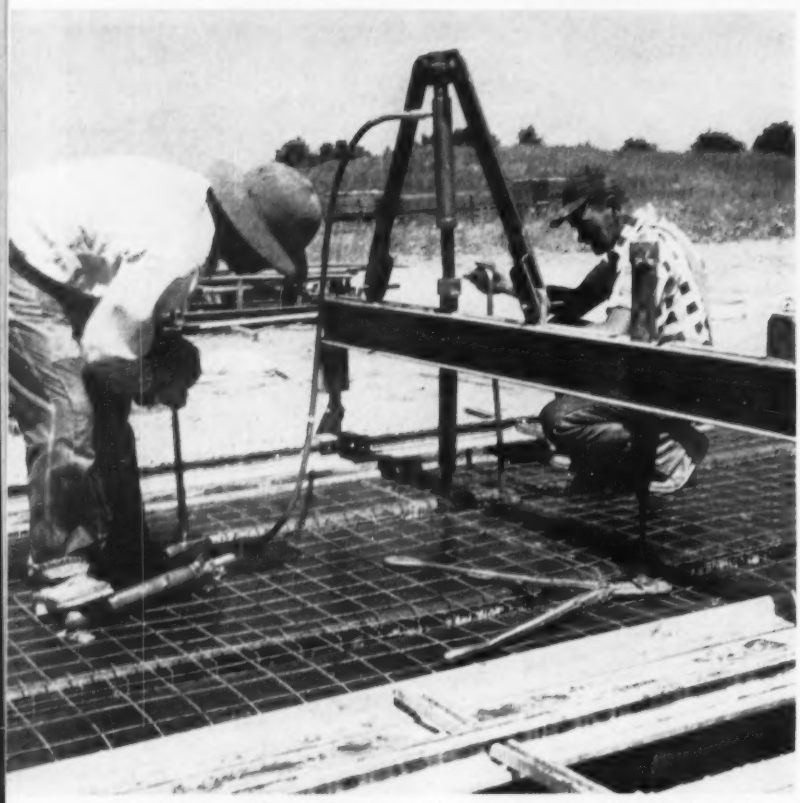
Main members of the bed are

FRAME IS ENCLOSED by Cemesto board for insulation. Note air, electric outlets.

STRANDS ARE TENSIONED by pair of 60-ton Simplex hydraulic jacks powered from electric pump. Maximum load is 230,000 lb.



JACKS ARE CARRIED by cart and react against end of casting bed. Transverse beams transmit stress to bed's side members.



STANDS ARE DEPRESSED at mid-length of casting by jacking down angle saddle and bar, which will be pinned to double-channel frame hooked to sides of casting bed.

DEPRESSER IS PINNED to frame to hold strands so jack and yoke can be removed.

BATCH PLANT IS FED with bagged cement by Mulkey conveyor. Job's American truck crane has already loaded plant bins.

DRY BATCHES ARE DUMPED from Winslow Binanbatch unit into Concrete Transport mixer, and correct water is metered in.

CONCRETE IS POURED by belt conveyor that contractor added to mixer truck. Stow vibrating screed and Vibro-Plus internal unit compact the stiff, 1-in.-slump mix.

CASTINGS ARE CURED under Richlite film. Taut wires will hold tarp placed next.

two longitudinal 16-in., 45-lb wide-flange beams. They are supported by 6-in., 20-lb wide-flange transverse beams bolted beneath them on 5-ft centers. The transverse members rest, in turn, on small concrete piers.

Steel pan forms, custom made from ¼-in. plate, fit between the longitudinal beams. The form is a three-piece unit: One piece on each side forms the outer portion of the double tee's slab and legs, the third piece forms the center of the slab and the inner faces of the legs. At the base of the legs the form pieces are flanged so they overlap. Here they are bolted to the 6-in. transverse beams of the bed frame. Various spacing of bolt holes and different size center form pans make it possible to cast members with different leg spacing.

The form for the slab edge is simply a loose 2x3-in. steel angle, whose upstanding leg corresponds to the 2 or 3-in. slab depth. Clamps hold the angles in correct position for a pour. The clamps are just transverse slotted steel bars with a bolt through the slot into the flange of the frame's longitudinal beam. Thus the form can be adjusted easily for slabs of different widths.

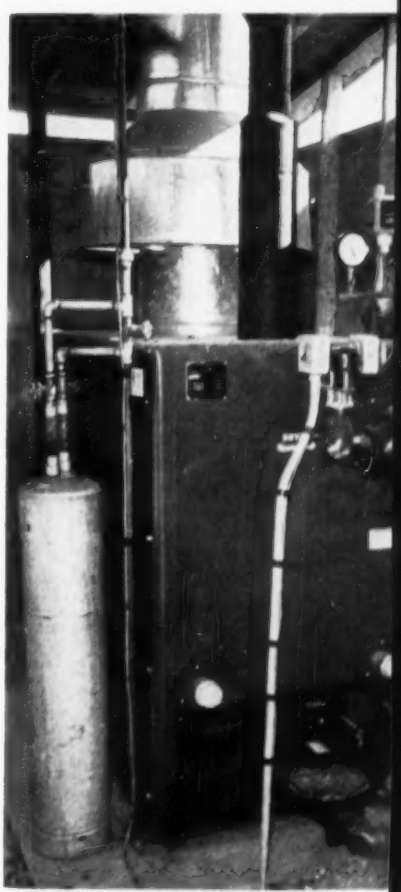
The complete casting bed is assembled of ten 30-ft lengths of frame-form. To insure correct fit between abutting units, ½-in. thick steel plates were welded across both ends of each longitudinal beam. Then the units were milled exactly square and to exact 30-ft length for a perfect match. Four ¾-in. bolts hold the flush, mating plates together. The steel pan forms of adjacent units are joined together by splice plates held by flat-head machine screws.

Frames Transfer Stress

The two end units of the casting bed differ somewhat from the others, of course, because they incorporate facilities for anchoring and jacking the pretensioning strands. Anchor and jacking posts, built up of heavy welded steel plates, are set vertically. The posts are welded to two transverse 16-in., 45-lb wide-flange beams. These beams, in turn, are fastened to the bed's main longitudinals to transmit the load from end to end.

Thus, all stress is absorbed by the bed, eliminating heavily anchored abutments. And because the bed is sectionalized and can readily be unbolted, it can easily be moved to different job sites. Each section weighs about 3½ tons. so the entire bed can be hauled in three or four truckloads.

In the portable bed, Craftsmen



STEAM IS SUPPLIED by Bryan boiler controlled by thermocouple in pour.

PRETENSIONING STRANDS ARE CUT by oxy-acetylene torch after jacking tension has been released. Note adjustable form clamp.

BOND IS BROKEN by jacking slab up slightly. Jacking carriage (below) rides 16-lb mine rails welded to top of bed frame.

casts 1,650 sq ft of floor and roof deck daily. The schedule generally goes something like this:

7:30 - 10:00	*Remove castings from forms*
10:00 - 12:00	*Clean and oil forms. Set prestressing wires, reinforcing mesh, blockouts, and inserts*
12:00 - 12:30	*Lunch*
12:30 - 1:30	*Continue readying for pour*
1:30 - 3:00	*Pour*

Prestressing wire, Roebling ⅜ and 7/16-in. seven-wire strand, is stored on 16 reels in a heavy timber rack at one end of the casting bed. For stringing, strands are threaded through the dead-end anchorage and attached to a steel sled. Then a cable from a gasoline-powered winch at the opposite end pulls the sled and its strands to the jacking location. Strandvises hold the wires in position.

Jacks Tension Strands

Two Simplex 60-ton hydraulic jacks powered by electric pump handle the prestressing. They are clamped into a cart that rides on casters on a paved area at the end of the bed. Depending on the strand pattern of the members being prestressed, the jacks can be shifted horizontally and can be screwed up or down by a center supporting column. The cart itself is fitted with a grill of heavy steel horizontal bars through which the required number of strands can be anchored on a vertical spacing in multiples of 2 inches.

Bulkhead forms of steel plate separate adjacent precast members poured in the bed. And these bulkheads also help position the prestressing strands. But design of the members calls for the strands to be draped down from the ends of the casting toward its center to induce camber. For this, Craftsmen uses a hydraulic strand depresser that pushes the tensioned strands down at midlength of the member.

The depresser consists of a tranverse beam, which hooks over the outer edge of the bed's longitudinal members, and a jacking yoke that is pinned to the beam. Straddling the vertical line of strands is a short length of 1½x-1½x¼-in. angle iron with its legs extending downward at 45 deg. To the top of this angle is welded vertically a 6- to 8-in. length of ⅝-in. round bar. The bar fits loosely into a collar on a second bar. This latter is pushed down by the

CASTINGS ARE REMOVED from bed by truck crane and usually are loaded on to one of three flat-bed truck trailers. Tractor pulls loaded trailer to exact location on job, where same crane lifts precast members and positions them in building.

jack, depressing the strands, and then is pinned into position on the assembly's transverse beam. Now yoke and jack can be removed to depress strands at other locations. All that is lost in the concrete of the pour is the clip angle with its short attached rod.

Concrete for the precast members is batched on the site and mixed in transit trucks. Plant is a Winslow Binanbatch three-compartment unit. An American 30-ton truck crane keeps the plant supplied with aggregate; a Mulkey inclined conveyor feeds it with bagged cement.

Concrete is an 8-sack mix with sand and ¾-in. rock, having a maximum 1-in. slump.

Mixer Carries Conveyor

Two transit mix trucks deliver the concrete to the forms. Basic units are 1½-yd Concrete Transport Mixer units on International trucks. But Craftsmen altered the mixers by adding a side-delivery belt conveyor that discharges the stiff concrete mix right into the center of the form. A power take-off from the truck engine drives the conveyor.

A Stow 1½-hp electric vibrating twin-beam screed strikes off the concrete in the forms. In addition, a Rollgear electric 1⅜-in. internal vibrator helps compact concrete in the castings' legs. To make it easy to use vibrators and other power tools, the casting bed is permanently fitted with two 110-v electric outlets and one compressed air outlet every 50 ft along one side.

As soon as a day's pour is completed, the slab surface is covered with Richlite polyethelene film to prevent loss of moisture. And a Fiberthin plastic-impregnated nylon tarpaulin is draped over the top and sides of the bed. Easily placed by only two men in less than 10 min, the lightweight and tear-proof tarp creates a dead-air space of about 18 in. that minimizes heat loss. Heat loss also is reduced by sheets of 13/16-in. Cemesto board that are permanently affixed to the outside of the casting bed.

Steam Heats Bed

To hasten curing, four 2-in. steam lines extend the full length of the bed beneath the pan forms, supplying radiant heat. A 25-hp Bryan boiler furnishes steam. Fired by natural gas, the boiler is a package unit.

Temperature is automatically controlled by a thermocouple bulb hooked up to the boiler's thermostat. The thermocouple is inserted in a ½-in. copper tube 6 to 8 in. long that is sealed with putty and embedded in the poured concrete of a member's

CASTINGS ARE PLACED to make a deck for high school in Denver suburb. For two schools, contractor is making 261,000 sq ft of prestressed slabs of channel, double-tee, and single-tee types. Some members are pie shaped, some have rounded ends.

leg. Additionally, thermometers located at the one-third points along the bed allow a close check on temperature.

Heat is not turned on until after the concrete's initial set, usually 3½ to 4 hr after pouring. But heat then is applied until concrete test cylinders indicate 3,500 to 4,000 psi, depending upon the size of the members cast. Usually 4,400 to 4,500-psi concrete is achieved 15 to 20 hr after pouring.

When the members are ready for removal from the forms, end tension in the prestressing strands is released and the strands are cut with an oxy-acetylene torch. Then, to break the bond with the forms, the slabs are jacked up.

Jacks Free Slabs

For this slab freeing, Craftsmen has devised a simple cart that rides 16-lb mine rails welded lengthwise on the bed's main longitudinal beams. A hand-operated hydraulic jack sits on the cart. And a double-ended cable riding over a sheave atop the jack's ram is hooked to wire loops cast in the slab. The device lifts the member only high enough so a 2x4 can be slipped beneath it. Then the American truck crane that services the batching plant, and which later erects the members for the high school, removes the precast unit from the casting bed.

The rail-riding cart has other uses too. It carries a pressure tank that can be charged with compressed air to power the sprayer that coats the forms with oil prior to concrete placement. And the cart carries heavy tools, parts, and materials along the 300-ft length of casting bed.

Craftsmen Construction Co.'s Frank M. Hall credits Prestressing Consultant Ross H. Bryan with the success of the operation. "He did an excellent piece of work," says Hall, "and it is completely satisfactory in every respect."

Hall's partner, D. L. Farnes, Craftsmen vice-president and general superintendent, is in charge of construction of both of the high schools the firm is building. Lowell Hancock is superintendent of the prestressed concrete operation.

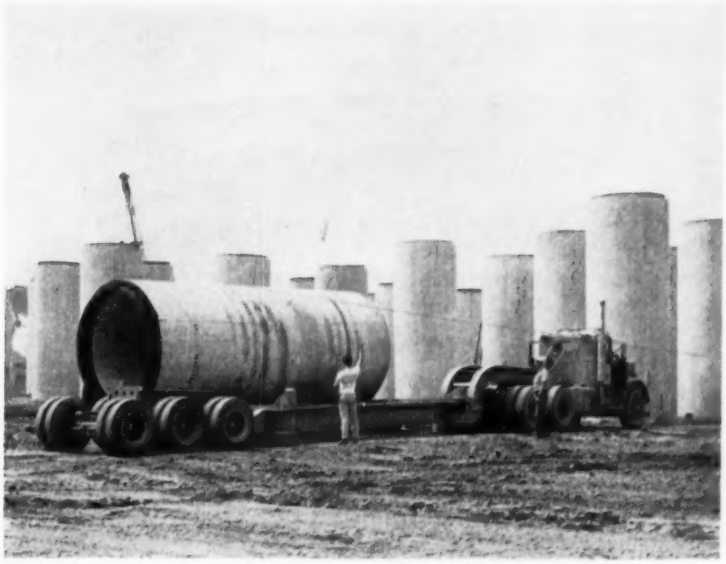
Craftsmen's contracts for the two schools, in the Denver suburbs of Wheat Ridge and Lakewood, total some $3,300,000. Architects are Ralph D. Peterson and Arthur T. Auburn, and structural engineer is J. W. Sallada, all of Denver.

Job Moves Fast

Craftsmen's school contracts were awarded Feb. 1, and first concrete was poured May 1. During six weeks of that comparatively short time the portable prestressing bed was designed, built, tested, and proved, while other phases of school construction proceeded. That the scheme has worked out well is attested to by the fact that, in August, full capacity of the casting bed was turned out on each of the month's 22 working days.

Two underwater pipe-laying jobs provide an unusual contrast in equipment and procedures. Here are the stories.

MOVING PIPE SECTIONS — In yard, a bulldozer with pneumatic tires mounted on blade moves the 24-long, 37-ton pipe sections by rolling them along the ground.



LOADING PIPE—Bulldozer pulls pipe up steel ramps to trailer with cable passing around pipe and connected to side of trailer. Trailer was built especially for this job.

Teamwork Lays Lake Erie Pipe

PRECASTING AND LAYING a concrete water intake pipe 2½ mi long on the bottom of Lake Erie for the city of Cleveland was a complex operation that required the combined talents of four specialized companies. Here's the way they lined up.

- Price Bros. Co. of Dayton, Ohio, designed the 10-ft dia pipe and cast it in 24-ft lengths.
- White Bros. Construction Co. of Dayton moved the pipe from the casting yards to a specially constructed pier 12 mi away on the Lake Erie shore.
- Talbert Construction Equipment Co. designed and built a trailer capable of carrying the massive 37-ton pipe sections.
- Merritt - Chapman & Scott Corp. took over at the pier, barged the pipe out into the lake, and laid it in a prepared trench.

The job is part of an $18-million expansion that will increase Cleveland's water intake by 50 mgd. The intake pipe and pump station will have a 150 mgd capacity. The intake pipe connects a crib 2½ mi from shore to a pump station on shore.

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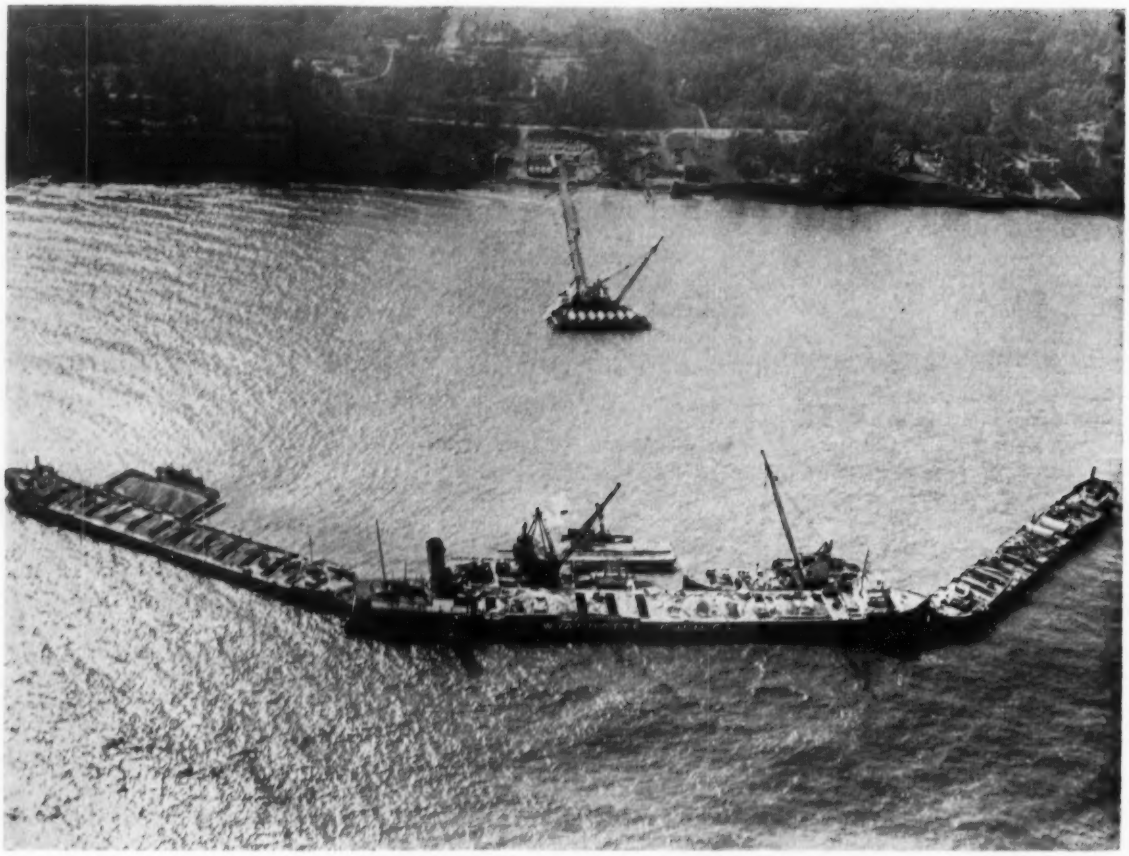


TEMPORARY HARBOR—Three freighters filled with sand rest on bottom to form harbor that protects marine equipment during bad weather. Ships will be refloated later. Contractor built 600-ft steel trestle pier so the pipe could be loaded on barges.

Pipe Handling

One of the biggest problems right down the line was how to move the big pipe sections.

To get the pipe from the forming yard to the pier and keep within highway weight limits, a special trailer was necessary.

The Talbert Co. built one that did the job. It has three axles and 12 tires on the rear. With the tractor hooked on, a total of six axles and 22 tires carry the load.

The trailer, though built for this particular job, can be adapted for other uses. The rear axle is removable, and the beam deck can be interchanged with standard types so the trailer can be converted easily for other uses.

In the casting yard, a bulldozer moved the pipe around by rolling it along the ground. Four pneumatic tires, mounted on the front end of the dozer blade, acted as a cushion.

To load a pipe section onto the trailer the bulldozer pushed it onto a ramp set up beside the trailer. The ramp consisted of three sloping steel beams with a wooden plank runner on the top of each.

The dozer pushed the pipe far enough up the ramp to get it completely off the ground. A steel cable, with one end fastened to the near side of the trailer, was passed around the pipe, carried back over the trailer, and hooked to the bulldozer, which had moved to the other side of the trailer.

The dozer then tightened the cable and pulled the pipe onto the trailer. Chains held it in place during the trip to the pier.

The trailer handled only one section at a time. During the job it made 535 round trips to carry all the sections to the pier.

Building A Harbor

To get the pipe from lake shore onto barges, Merritt-Chapman & Scott Corp., the prime contractor for the entire lake section, built an artificial harbor.

They picked a spot opposite a break in the high bank shore line to establish headquarters, storage yard, pier, and marine loading facilities. The site was less than 2 mi from the intake line so the barges did not have to travel far.

The pier, built especially for this job, extended 600 ft into the lake and consisted of steel pile bent trestles and stone fill.

MC&S formed a breakwater outside the pier by filling three ore freighters with gravel until they rested on bottom in the shallow water with the superstructures still above water level. These boats, owned by the contractor, protected the loading operation from rough water, and served as a harbor for all marine equipment during stormy weather. They have not been damaged and will be refloated when the job is complete.

On the shore end of the pier a loading platform received the pipe sections from the trailer. A bulldozer mounting tires on its blade pushed them on to a railroad car as they were needed.

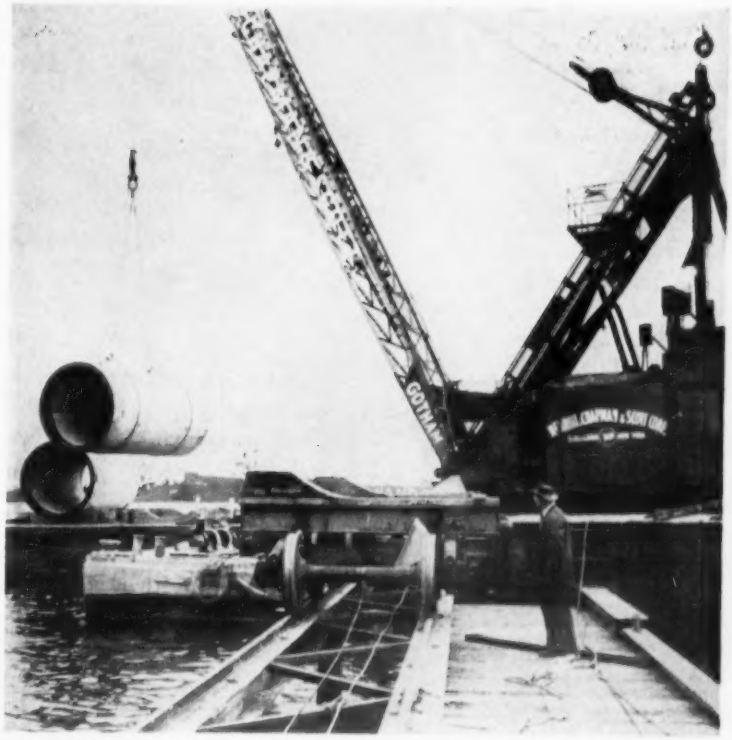
The car traveled on rails to another loading platform at the lake end of the pier. Here a stationary derrick or derrick scow loaded the pipe on to scows for towing to the job.

Placing Pipe Sections

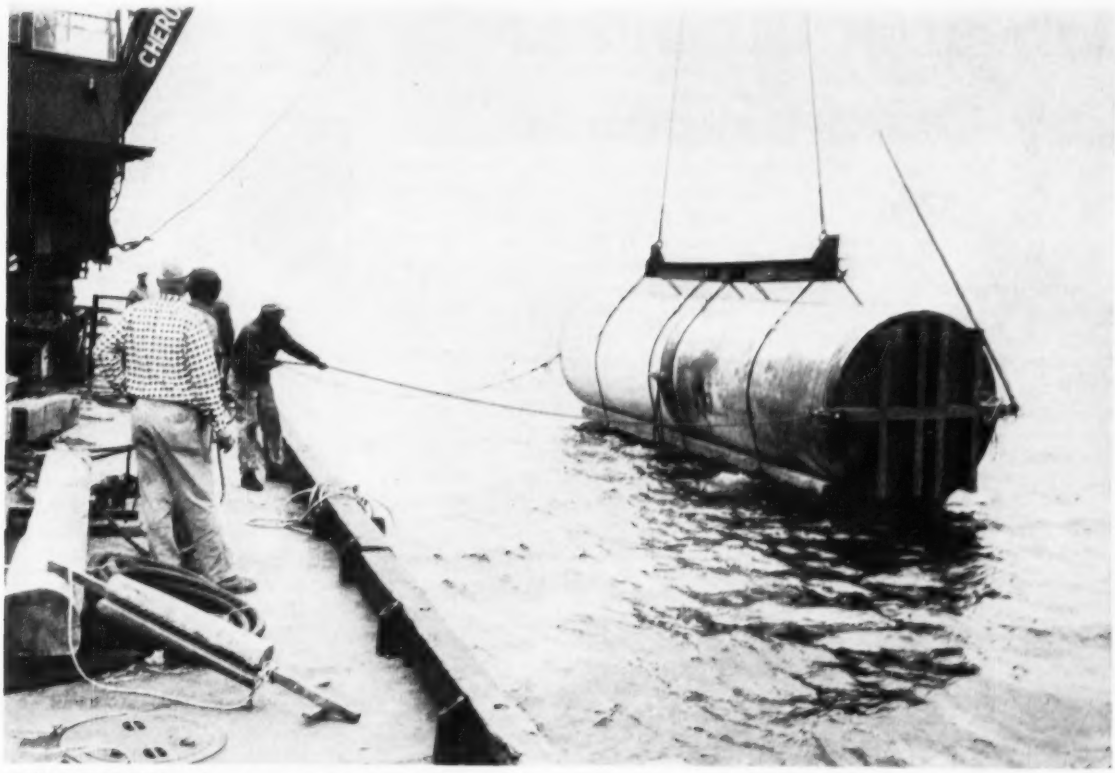
Floating derricks lowered the sections into a previously excavated trench on the lake bottom. The bell and spigot joints were made water-tight by self-sealing, one-piece, molded rubber gaskets on steel rings. The rings were cast into the pipe and welded to the ends of the reinforcing bars.

Divers drew the pipe sections together under water with lug and anchor assemblies cast into the pipe.

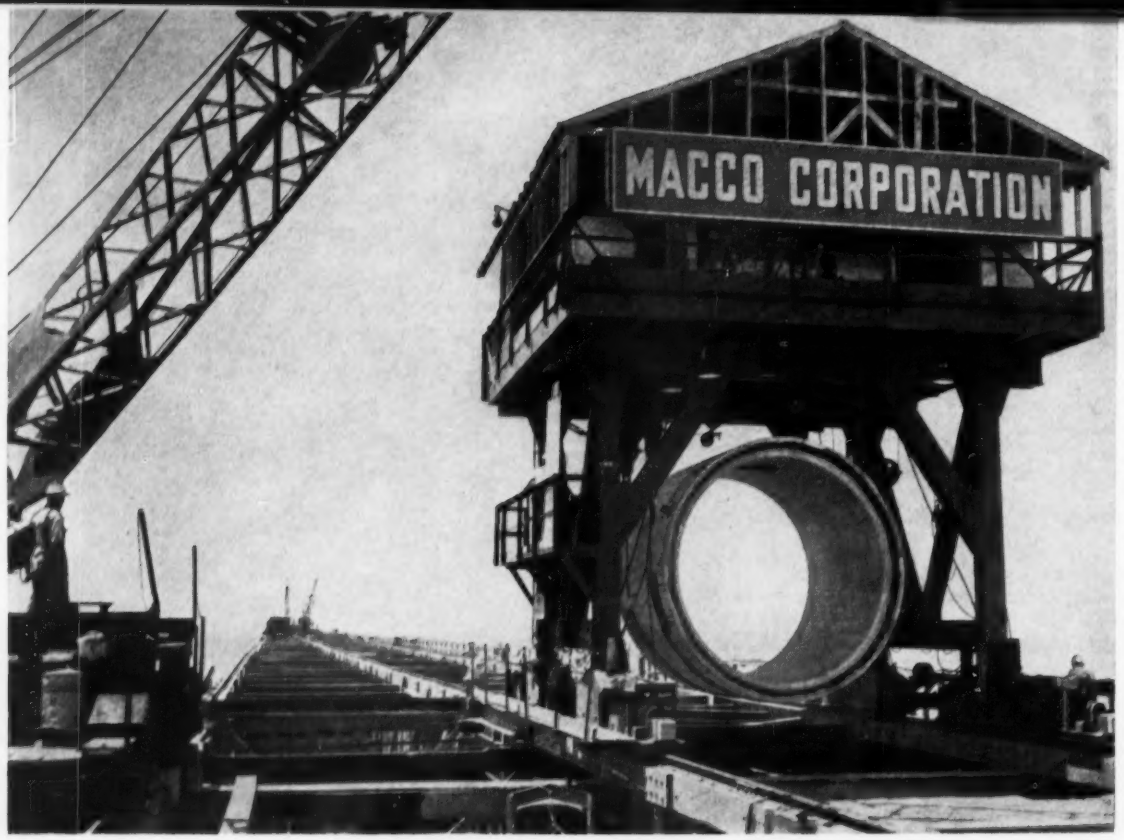
Project superintendent for Merritt-Chapman & Scott was Vert L. Rock.



LOADING BARGES—At end of pier derrick transfers a pipe section from special railroad car to barge. Rail line carries pipe from shore storage yard to end of pier.



LAYING THE PIPE—When barge and pipe reach site of intake a floating derrick lays pipe in specially prepared trench at bottom of lake. Wooden bulkhead at end of pipe keeps out mud. A diver will draw sections together to form a tight joint.



PICKUP—Gantry crane contractor designed and built for the job picks up 40-ton concrete pipe section at beach end of the trestle and carries it out to laying position. Operator controls crane from panel on platform at the left side of the gantry.

Job-Built Machines Lay Ocean Pipeline

IT'S EXPENSIVE and a lot of trouble to design and build special purpose machines. But sometimes that's the most efficient—and profitable—way to handle a job.

Macco Corp. of Paramount, Calif., contrived two ingenious rigs to lay a pair of big concrete pipelines nearly 2,000 ft out into the Pacific Ocean at El Segundo, Calif. These machines make the $3-million job almost a production line operation.

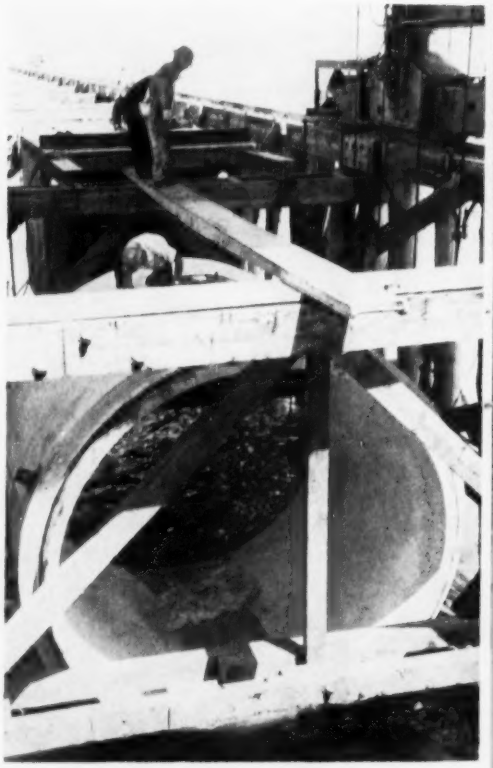
The two big pipelines will circulate cooling water through the $60-million Scattergood steam plant of the Los Angeles Department of Water & Power. The intake line will be 1,944 ft long; the discharge line, 1,558 ft. Both lines are made up of 12-ft lengths of reinforced concrete pipe of 144-in. inside dia produced by United Concrete Pipe Corp.

All the equipment on the job rides on a single trestle that extends from the beach to a point about 50 ft beyond the terminal point of the longer pipeline. The trestle is constructed of timber except for the last 500 ft which is steel. It carries three steel rails for 1,608 ft and two rails for the last 384 ft beyond the end of the shorter discharge line.

Macco designed a special gantry crane that rides these rails, hauling pipe sections from the beach and placing them. It rides on the center rail and one outside rail while laying the discharge line. By means of a transfer table at the beach end of the trestle it shifts over to ride the center rail and the other outside rail to lay the intake line.

Northwest 80 cranes dig the trench for each pipeline. The cranes are equipped with clamshell buckets and carriages designed to ride the rails.

Riding the rails between the



PLACING—Gantry lowers pipe section into the water. Diver then telephones crane operator instructions for final positioning.

two cranes is the second Macco-designed machine. It is called an "eductor." The excavating cranes empty their buckets into a hopper on the eductor. The rig then chutes to one side all material too large for its 10-in. dredge pump to handle and pumps the rest through a line beyond the gantry to backfill the trench.

Continuous Operations

Trench excavation ahead of the pipe and backfilling the trench is a continuous operation. Backfilling always is complete up to the last three or four joints. Cover over the inshore end of the line is a maximum of approximately 25 ft; it averages about 5 ft offshore. Interlocking steel sheet piling provides trench protection along the beach and into the water beyond the surf line.

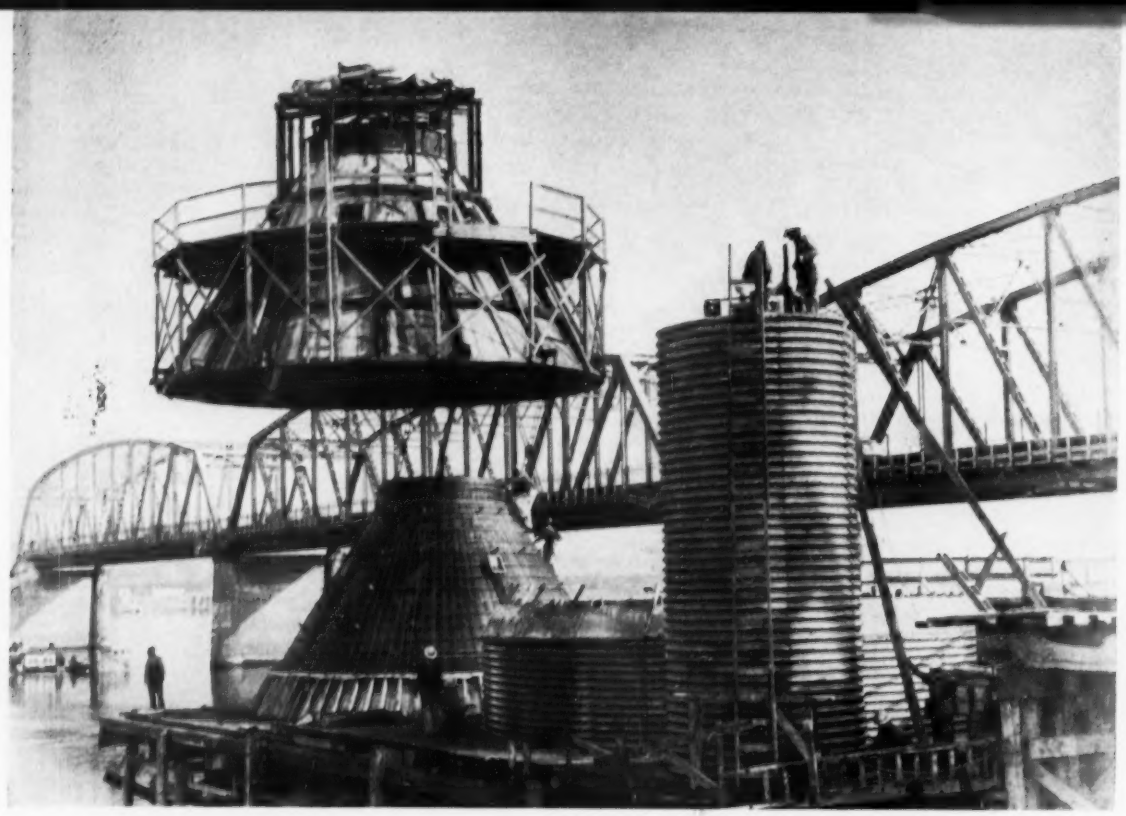
The 40-ton pipe sections are delivered to the job by truck and winched up a ramp on to a "roll table" at the beach end of the trestle. There a rubber gasket is fitted into the spigot end, and the section is ready for laying.

The gantry lowers the pipe section into the water at approximate position. A diver then telephones instructions to the crane operator to guide the section into final position. Depth below water level averages 33 ft.

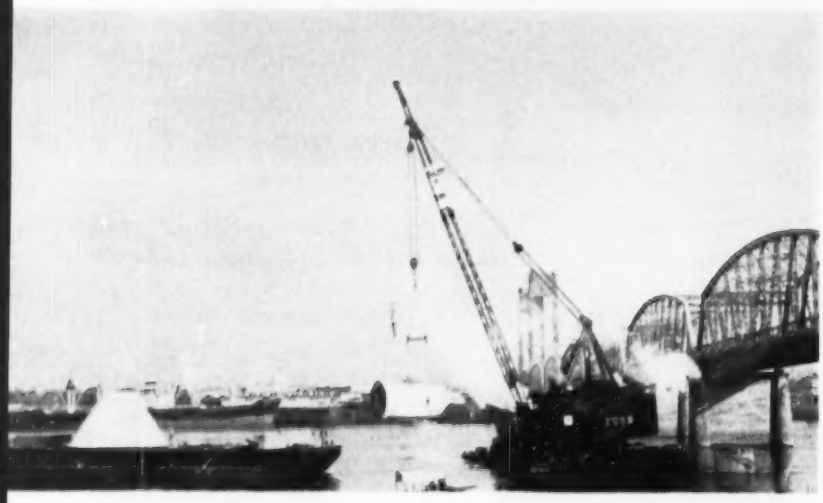
Macco was awarded its contract Jan. 29, 1957, and expects to complete both pipelines by the end of this year. Jack Christensen is project superintendent.

WORK TRAIN—All equipment for excavating, backfilling, and laying pipe sections travels on rails over trestle that extends out nearly 2,000 ft into the Pacific Ocean.

UNLOADING—Truck delivers 40-ton pipe section on to ramp. From there it is winched up on a "roll table" at the end of the trestle, and a rubber gasket joint is fitted into the spigot end. Then it is ready to be picked up by the gantry.



CASTING—All water piers on $6.7-million Interstate Bridge crossing Columbia River between Washington and Oregon first are precast as hollow shells on the river bank.



PLACING—Once cast in sections, shells are carted out to river locations where they are sunk and their cores tremied full of concrete. More than half of the 18 finished piers will stand in 50 ft of water.

Building River Piers on Land

BRIDGE PIERS can be built in 50 ft of water without driving caissons or going through the costly business of building cofferdams. Just take what is traditionally the toughest part of the bridge job out of the water and do most of the work on the riverbank.

Guy F. Atkinson Co., building the $6.7-million Interstate Bridge over the Columbia River between Washington and Oregon is doing just that. Atkinson precasts concrete shells on the river bank, then lowers them into the water over driven piles, and finally fills them with tremie concrete.

The job includes a 3,531-ft main bridge and a 1,180-ft bridge over the Oregon Slough. The two bridges will require a total of 18 piers standing in 50 ft of water.

Normally, this would call for caisson or cofferdam construction. And that's the way the job originally was planned. But threats of high water and difficulties in scheduling work prompted the Oregon and Washington highway departments to ask for alternate methods before work began.

continued on page 105

The No. 12's part in a good team job

The Caterpillar No. 12 Motor Grader is a key piece of equipment in efficient earthmoving. By leveling fill and building and maintaining haul roads, the No. 12 helps tractor-scraper rigs handle bigger loads in faster time.

The job pictured is at Fogelsville, Pa., where W. E. Johnson had a 231,000-yard contract, relocating nearly a mile of U. S. 22. Smooth haul roads maintained by the Cat* No. 12 Motor Grader allowed three Cat DW21s pulling No. 470 Scrapers to move 4,000-6,000 yards of dirt per day.

In Mr. Johnson's words: "We're Caterpillar people. We've had a lot of experience with Cat equipment and we know when we start a job we can count on finishing it with a minimum of down time."

Construction men everywhere regard the No. 12 Motor Grader as the standard in its field. It is ruggedly built for heavy, round-the-clock work. And its balanced design and dependable four-cycle Cat Engine make it a big producer. Operators like the fast, positive controls, easy blade positioning and unobstructed visibility from the seat. Most tire down time is eliminated by tubeless tires. The exclusive oil clutch operates for many hundreds of hours without adjustment. And in-cab starting, electric or gasoline, is standard.

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Building bridges is BIG business along the Erie section of the New York State Thruway. It takes good cranes to do the job . . . on time! This view near Westfield, New York, shows two BAY CITY CraneMobiles, with 80 foot boom and one yard bucket, pouring concrete for a bridge over Chautauqua Creek. BAY CITY cranes were employed for all erection, concrete placement and handling of materials throughout the job. Johnson, Drake and Piper, Inc., of New York City, the contractors for this work, are operating nine BAY CITY cranes on various projects in and around Buffalo.

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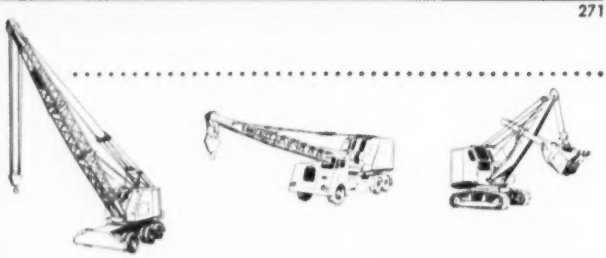
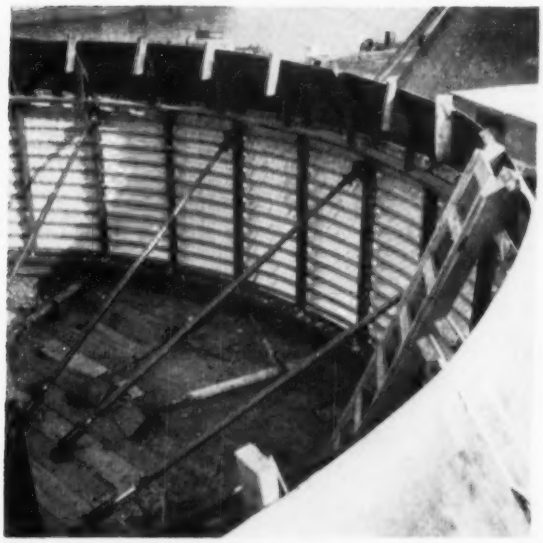


On-Shore Fabrication Eliminates Cofferdams



FORMING THE BASE SHELLS—Sheet steel serves as outside forms while inside forms are corrugated steel braced by screw jacks.

FORMING THE SHAFT SHELLS—Armco's multi-flo pipe is wrapped around template to mold corrugations inside face of shell.

BUILDING RIVER PIERS . . . continued

Atkinson's alternate offered an on-shore casting technique developed by Ben C. Gerwick Co. of San Francisco. It had been used successfully before, on the Richmond-San Rafael Bridge near San Francisco. The alternate promises to save $97,000 over the cofferdam method.

Preliminary Digging

Work began with clamshell excavation of 10 to 25-ft-deep pier beds in the sandy river bottom. Several thousand yards of muck were removed from each of the holes.

The contractor then drove clusters of 60-ft-long timber piles (84 to 120 piles per pier) to a 50-ft penetration with a McKiernan-Terry 10-B-3 double acting hammer. An H-beam spud helped in the underwater driving. Bearing piles protrude above the excavation bottom about 7 ft. Cut offs were made by jig and underwater saw.

Next Atkinson had to place supports on which the precast shells will rest until the concrete core is poured. The contractor on the Richmond San-Rafael Bridge drove temporary timber piles that supported a concrete ring with holes cast in it through which steel piles were driven both vertically and on a rake. The base shells of the precast piers rested on these.

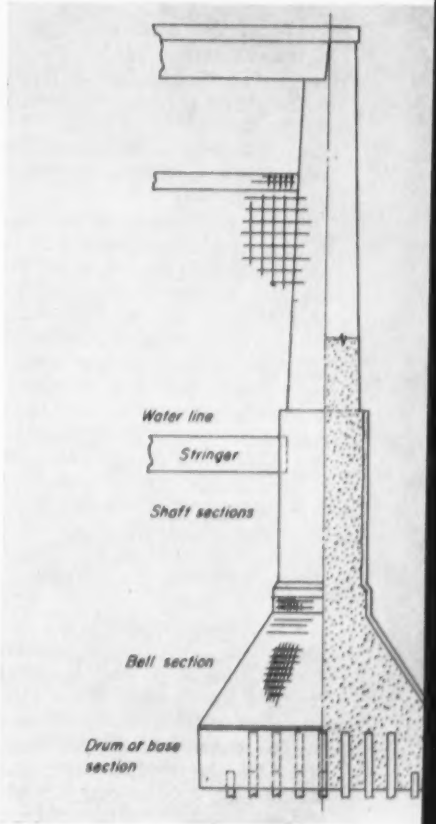
Atkinson's procedure differed. Three pairs of piles were driven to the bottom of each pier excavation. One pile of each pair went inside the shell perimeter; the other went outside. Sections of steel H-beam connected the piles and served as bearing for the bottom of the precast shells. This set the stage for the casting and erection work now underway.

Casting the Piers

Atkinson works on a special casting dock built on an island near the main structure. There, the contractor has set up a 45-ton Colby whirley crane with 140 ft of boom to lift materials and forms required for the casting operations.

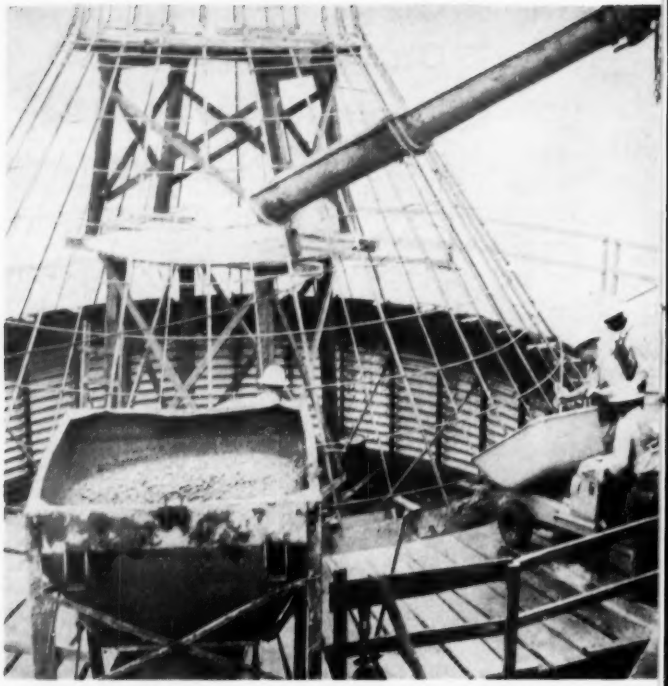
Three different sizes and shapes of shells are cast on this dock. They include a drum-shaped base shell that fits around the pile clusters; a bell-shaped shell that rests on top of the base shell; and a shaft shell that serves as one of the pier columns.

The drum-shaped base shell is cast in 32 and 37-ft dia with walls



PIER SECTIONS—Contractor breaks up pier into base, bell, and shaft sections.

READY FOR POUR—Bell-shaped sections stand formed, braced, and ready to be filled with concrete. It next is steam cured.



CONCRETING THE BELL—Powered carts, crane and bucket, and chutes are used to place transit-mix concrete into forms.

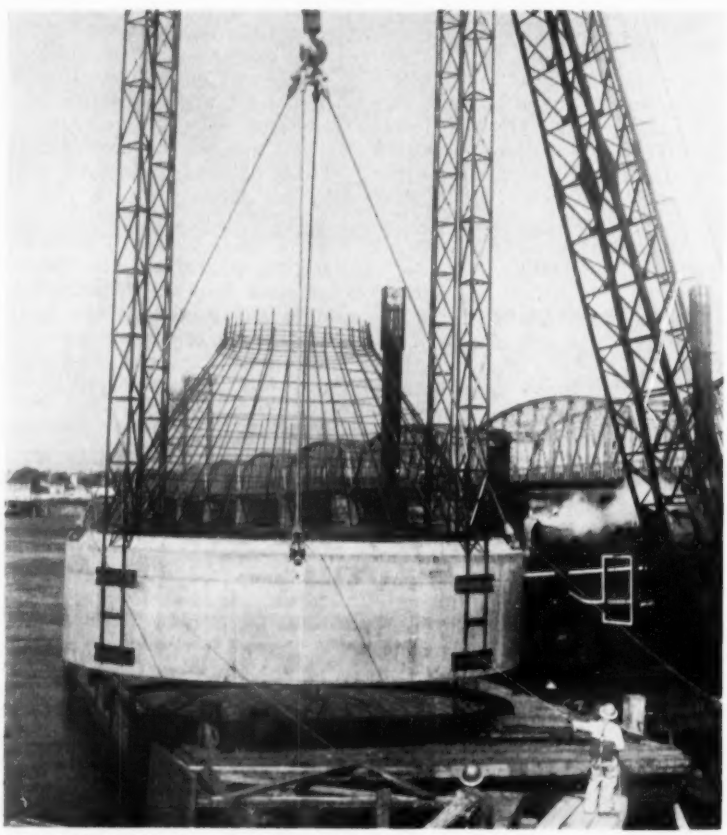
7 ft high and 8 in. thick. Each shell has a network of reinforcing steel bars protruding from the top in the shape of the bell member that will rest on top of it. Corrugated interior walls insure bond with concrete later to be poured within the core.

Bell-shaped sections are cast in two sizes. The larger bell tapers from a 37-ft dia to a 15-ft dia and stands 19 ft high. The smaller bell tapers from a 32-ft dia to a 13-ft dia and stands 16½ ft high. Bell walls are smooth both inside and out. (Corrugations are not needed because the weight of the bridge itself bonds the bell to the tremie concrete.)

Shafts that are set over the bells also vary in size according to their locations. Sizes range from 7 ft 10 in. in dia to 13 ft 4 in. in dia. They stand between 19 and 31 ft high.

Drum-shaped shells are cast first. The procedure is identical for bell and shaft shells. Outside forms made of regular sheet steel are placed vertically on the casting dock to the outside dimensions of the shell. Angle irons welded to the form face hold it braced vertically to the deck.

After reinforcing steel has been set, inside forms are erected. Atkinson uses Armco's multi-plate



BASE GOES FIRST—Crane lifts base shell from casting dock and carries it into position over water. Re steel will fit up into bell. Inside face of base is corrugated.

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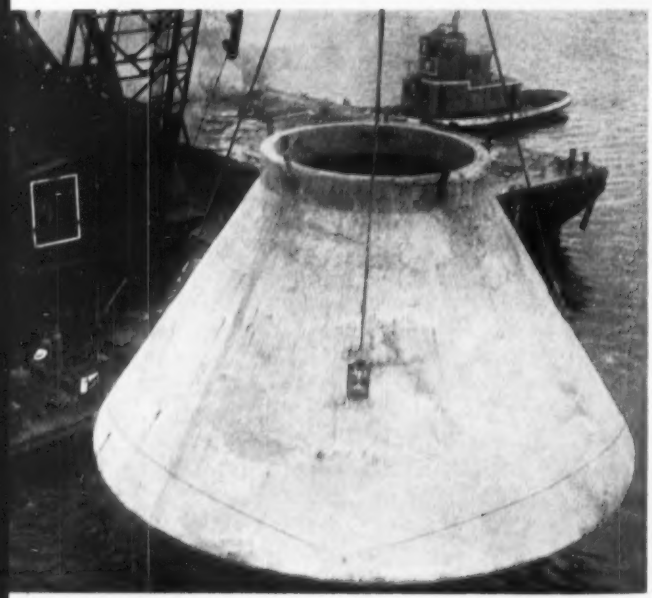
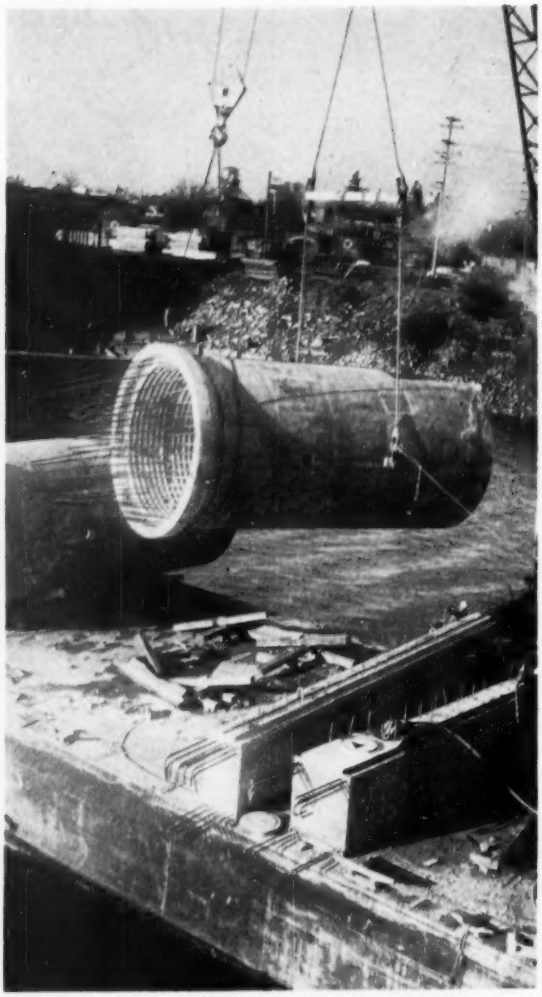
Cranes Carry Pier Sections From Dock to River Locations



NEXT COMES THE BELL—Precast bell being lowered will come to rest on top of base shell already in place and tremie sealed.



FINALLY THE SHAFT—Boat derrick lifts shaft section from barge with three-point pickup and turns it to vertical position.

corrugated sewer pipe. The pipe molds the corrugations needed on the inside walls of the shells.

Four sections of pipe are placed separately. Two main pieces first are forced out to position by jacks. Screw jacks anchored to the deck hold the form in position. Circular steel ribbing placed around the top and bottom of the inside form gives additional support. Finally, the remaining two sections of forms are slipped into place and braced with screw jacks.

Concrete may be chuted directly from transit-mix trucks into the shell walls, lifted into place by crane and bucket, or transported by Whitman Power Buggies. A plywood casing then is lowered down over the shell, and the shell is steam cured at 140-deg temperature from 24 to 48 hr. Casings and forms then are removed, and the shell is ready to be placed.

A 75-ton American Revolver boat derrick lifts the base shell—it weighs 65 tons—off the casting pier and lowers it through the river waters until it comes to rest on previously placed H-beam stringers that join the support piles at the river bottom.

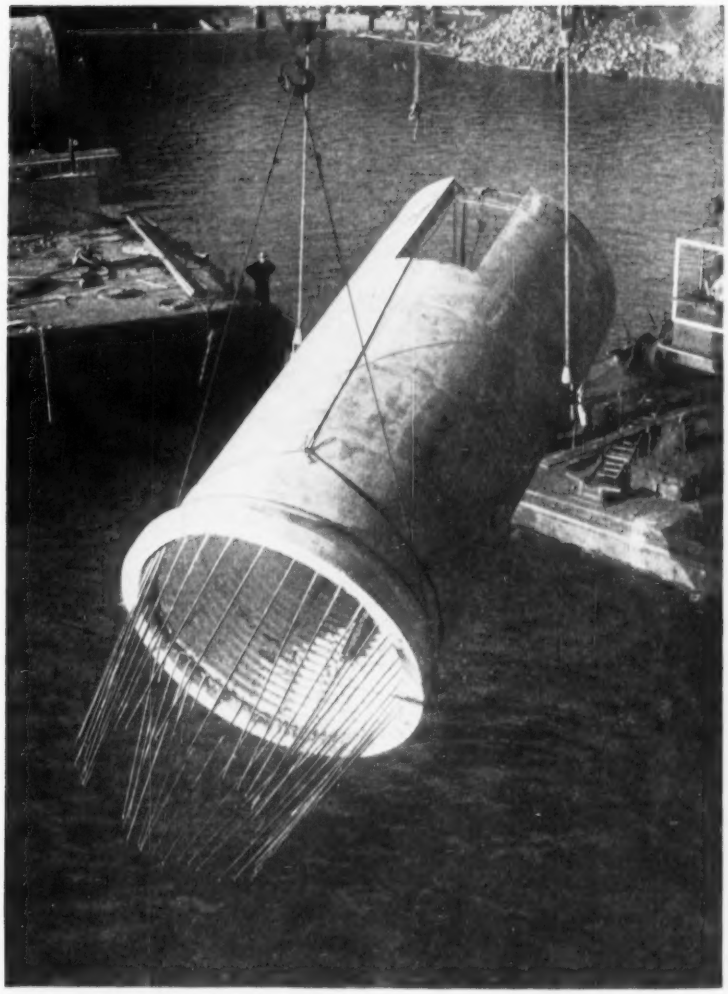
To concrete the shells ready-mix trucks back onto the pier and deliver a seven-sack mix of concrete into a hopper on the dock. There concrete is poured into two 4-yd Garbro buckets and carried to the boat derrick on two converted surplus LCM landing craft. The derrick lifts the buckets and unloads them into 12-in. tremie pipes leading down to the core of the shell.

The base shell is poured to a height of 5 ft to provide a bond between base shell and bearing piles. Ten days later bell and shaft sections are placed and tremied to complete a monolithic structure that rises 50 ft from foundation to water line. Two columns go into a pier. The two require a total of 1,100 yd of tremied concrete. These are connected at the top by a precast concrete stringer that fits into slots cast in the shaft tops.

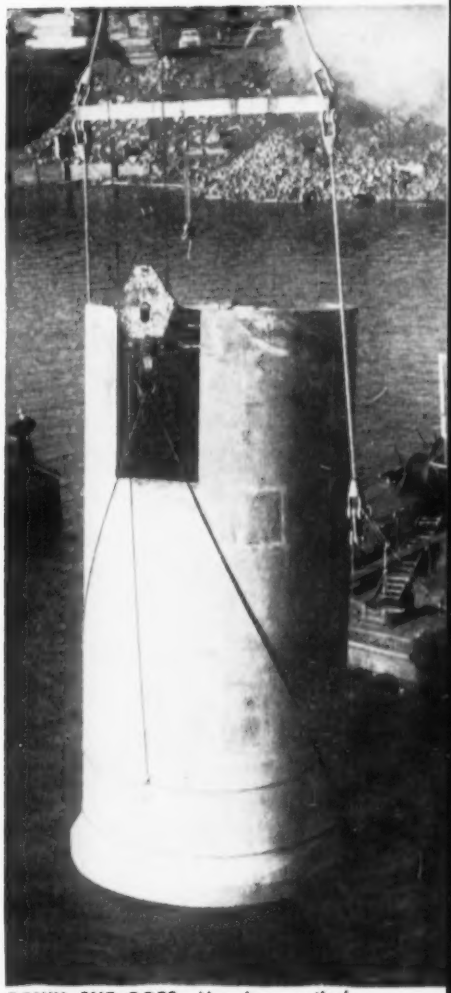
Pier construction from the water line up consists of forming and pouring in place extensions of the towers along with a reinforced concrete connecting wall between columns.

The Superstructure

The steel superstructure will be erected by Judson Pacific-Murphy Co. of Emeryville, Calif. The Interstate Bridge will consist of 16 spans. These include five concrete girder type spans, one steel



OVER ITS POSITION—Shaft shell tilts slowly downward. Reinforcing rods protruding at the bottom will extend into bell section. Core concrete will be poured later.



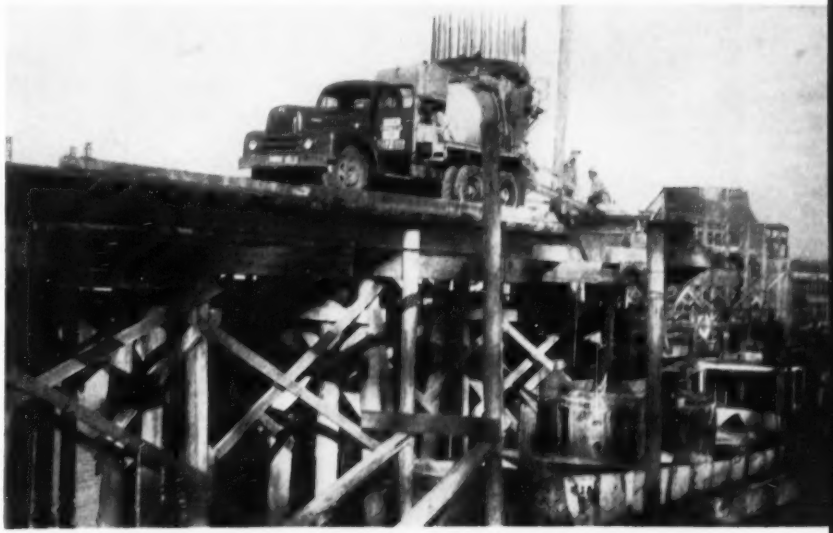
DOWN SHE GOES—Now in a vertical position, shaft shell is lowered into place.

truss vertical lift span, and 10 steel truss spans. The Oregon Slough crossing will consist of 19 steel web plate girder spans and 10 concrete girder approach spans.

The bridges will have a 40-ft roadway, and a 5-ft sidewalk. Both are being built under a tri-party agreement between the Washington Toll Bridge Authority and the highway departments of Washington and Oregon.

The Oregon State Highway Commission is in charge of engineering and supervision. Marshall Dresser is resident engineer. J. W. Harris, associate engineer, represents the Washington Highway Department.

George McCoy is Atkinson's project manager; other top personnel include Lewis Sheddy, general superintendent, and William Hanager, project engineer.



LANDING CRAFT JOINS THE ACT—Truck unloads concrete into 4-yd bucket set on converted LCM surplus landing craft. Craft carries concrete for pouring of cores.

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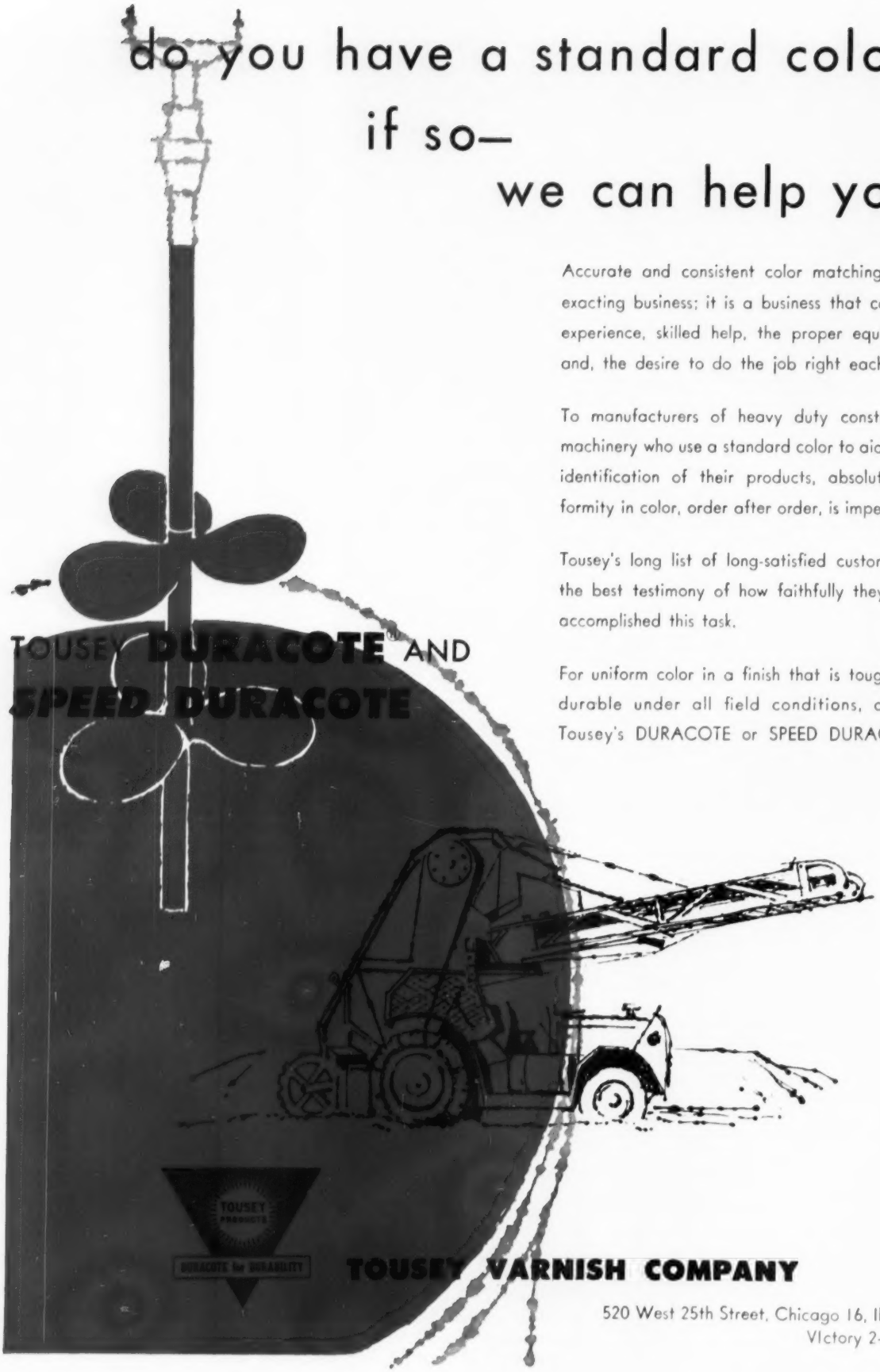

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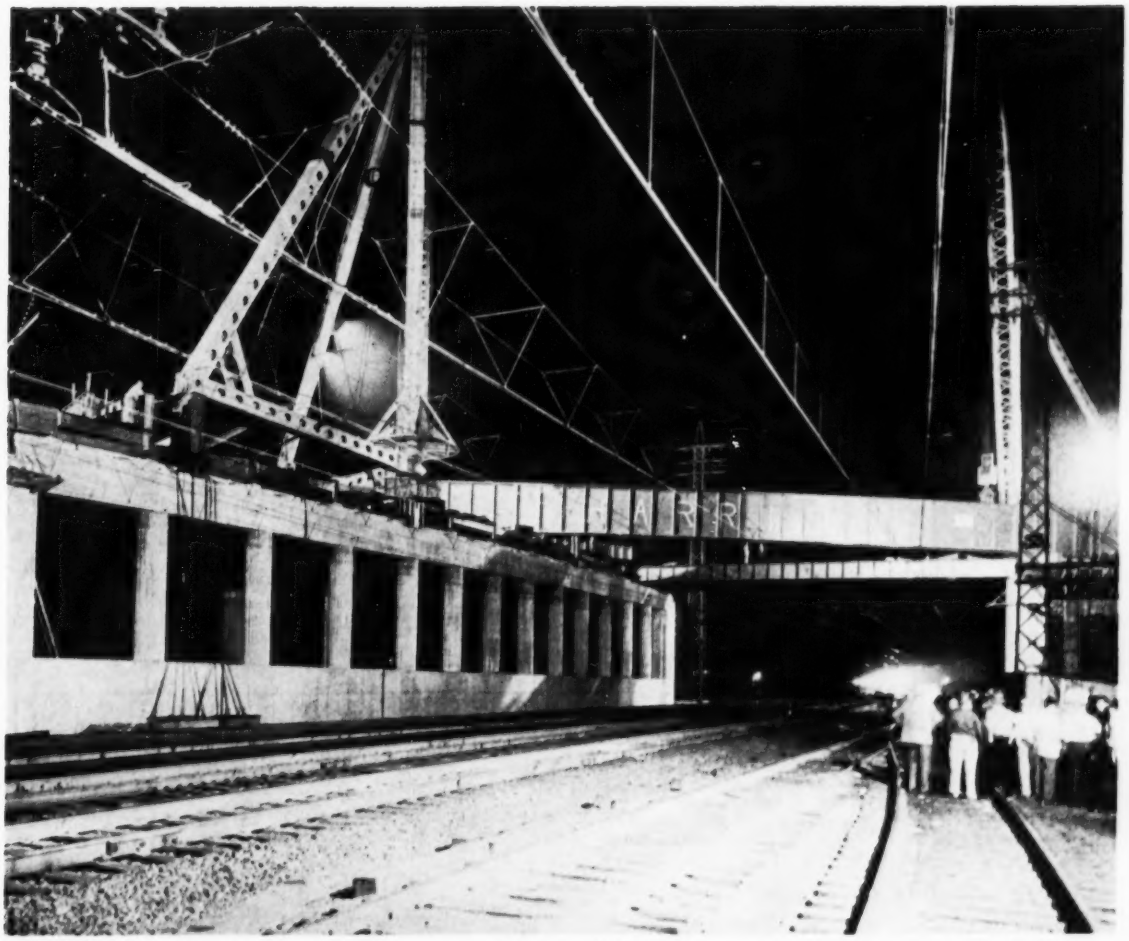

ERECTION—Bridge site is flood lit as Harris crews start work before dawn on Sunday morning. Main girder must be erected during 1½-hr break between trains. Two 150-ton cranes do job without disturbing overhead catenary lines.

Giant Derricks Place Girder

SPANNING the main line of the New Haven Railroad at Stamford, Conn., with a 221-ft steel girder was one of the toughest bridge assignments on the new Connecticut Turnpike.

Railroad restrictions plus a maze of high tension electric lines made impossible normal erection techniques, like using falsework. So the structural steel contractor —Harris Structural Steel Co. of New York—built two of the largest stiff legged derricks ever made for a bridge job to hoist the 245-ton girder into place.

Complicated Job

Because the bridge crosses the railroad at an angle, it takes 200 ft of bridge to span a 97-ft gap. To provide for a turnpike entrance ramp, one side is skewed even more. It crosses the railroad at an angle of 26 deg with the tracks. This was the side that needed the 221-ft girder.

This girder, designed by the firm of Andrews & Clark, is 11 ft deep, 4 ft wide, and is the longest on the bridge. The size of the girder would make it a major erection job on any bridge. At Stamford there were some additional complications.

- Two 11,000-v power lines, one on each side of the tracks, sharply limited the area of operations.
- Overhead electric catenary lines above each of the six tracks restricted the area still further.
- The railroad could not allow steel erection above its tracks while trains were passing because a dropped piece could easily wreck a train. And on this line, one of the busiest in the country, the only time that there is a reasonable working interval between trains is just before dawn on Sunday mornings.

Under these conditions smooth planning and good timing were essential.

Big Derricks

Harris decided that most of the assembly work had to be done off the right-of-way and the entire girder hoisted into place in one piece.

To handle such a weight they built two derricks specially for the job, each one capable of lifting 150 tons.

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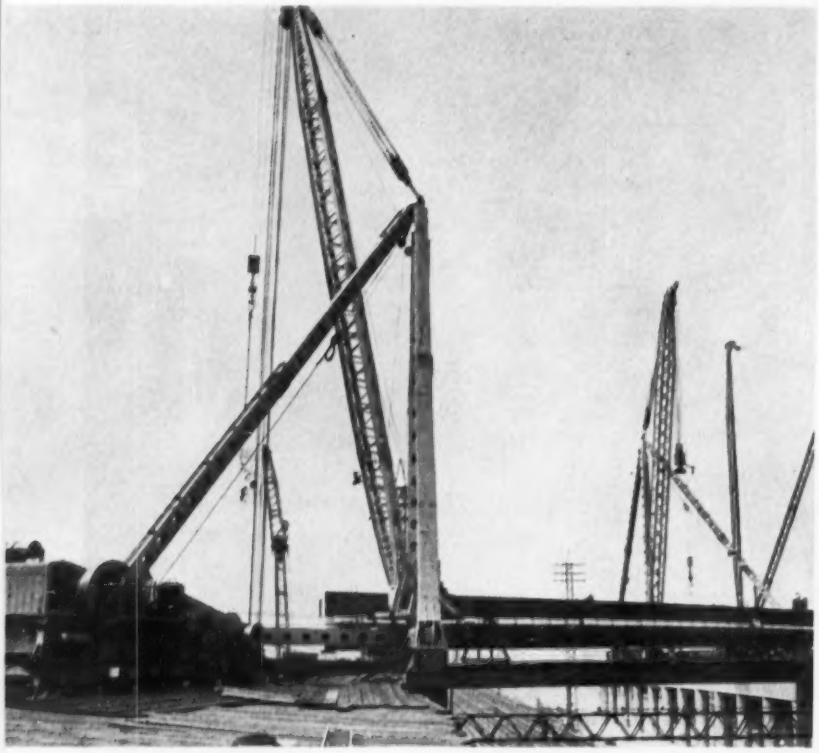
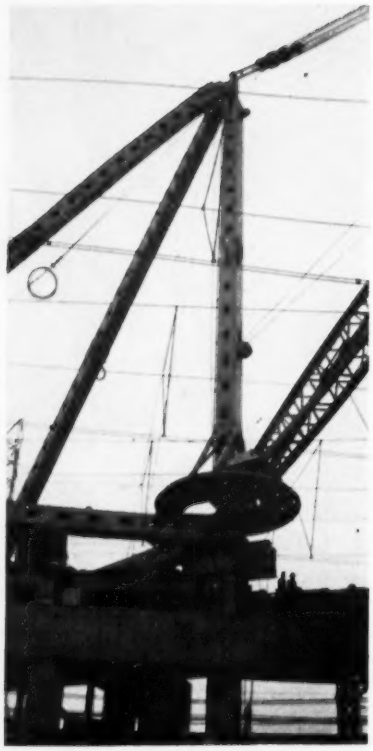


TWO-STAGE JOB—Derricks placed 2/3 of girder across span on first Sunday. During week, remaining third was added. Girder now is ready for final positioning.



MASSIVE MECHANISM—Two men standing under 16-ft dia bull wheel show size of derrick.

The derricks are not unusual in appearance except that they are larger and heavier than rigs normally used. The mast is 75 ft high and the boom 125 ft long. Two 55-ft sills, connected to the mast by sloping back legs, support the rig.

Normally the two sills would be fixed at 90 deg to each other. But on these derricks the angle of the sills is adjustable from 5 deg through 120 deg. This was necessary so that a derrick could be set up at different places on the abutments.

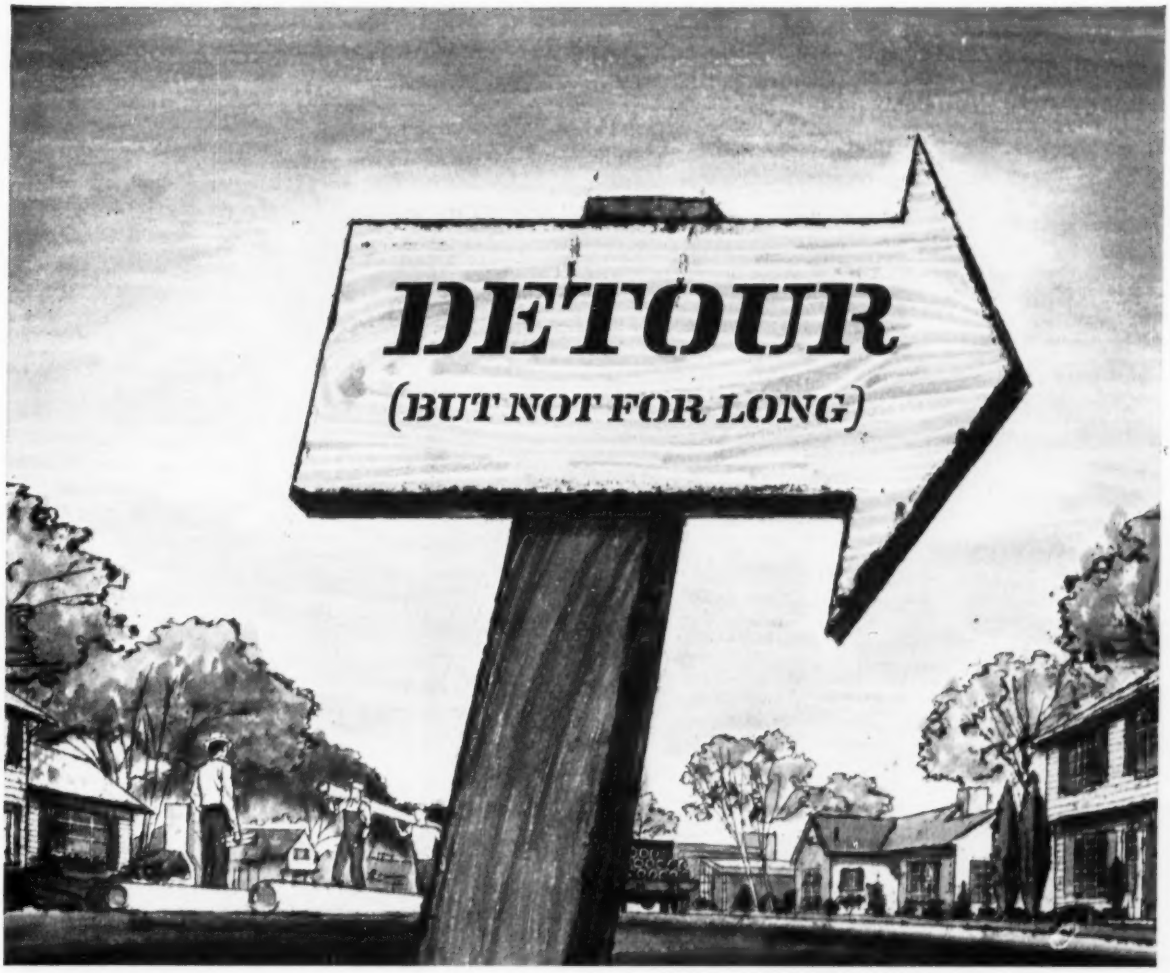
The derrick can lift its rated 150 tons within an 80-ft radius. With the boom out flat it can handle 100 tons.

A Clyde hoist, with 30,000-lb line pull, powers each derrick. The load line has nineteen 1-in. cables, and the line from boom to mast has 28. The hoist also turns the rig with 1¼-in. cables on a 16-ft dia bull wheel.

HOIST—Powerful Clyde hoist that can deliver 30,000-lb line pull powers each big derrick. Separate cables control load line, boom line, and bull wheel.

Erection

The girder was fabricated in three sections in the contractor's main shop and came to the Stamford rail yard on three flat cars. A



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Transite's Ring-Tite Coupling prevents two major sewer line problems. It locks out roots . . . seals out ground water!

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IN A SEWER PIPE INSTALLATION, you want a good "tight" system . . . and you want it completed fast! You get both of these advantages as well as long life and operating efficiency with Transite® asbestos-cement Pipe and the Ring-Tite® Coupling.

Why? Because lightweight Transite reduces handling costs, speeds work above and below ground. Quickly-assembled with the Ring-Tite Coupling, Transite Pipe ends are joined easily . . . *surely!* And to give you a tight long-lasting joint, rubber sealing rings in the Ring-Tite Coupling are tightly compressed between sleeve and pipe to lock out roots and overcome infiltration problems.

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Johns-Manville

TRANSITE SEWER PIPE WITH THE RING-TITE COUPLING

pair of trucks, traveling back to back, transferred the sections 1 mi from the rail yard to the job site.

In the meantime the two derricks had been set up, one on each abutment. When the girder sections arrived on the site, crews, using the derricks, connected two of them together and left the assembly within the lifting range of both derricks.

Hoisting the partly assembled girder into a position over the tracks had to wait until the next Sunday morning.

The erection crews had two opportunities to do the job. Shortly after 5 am there was a 1 hr and 22 min break in the busy New Haven RR schedule. Then around 8 am there was another interval of 1½ hr.

Harris scheduled the operation so that it could be finished during the first interval. This left the second period as a reserve.

On the first Sunday the derricks picked up the 2/3 of the girder already assembled and laid it in a temporary position straight across the 97-ft gap between the abutments. This was done without any trouble during the first time period.

Lack of space, and a railroad objection to having part of the girder cantilevered out over the track, prevented the entire girder from being erected in one stage.

During the following week crews connected the remaining 1/3 section so that the girder was complete but resting across the abutments at right angles to the railroad instead of the 26 deg angle required.

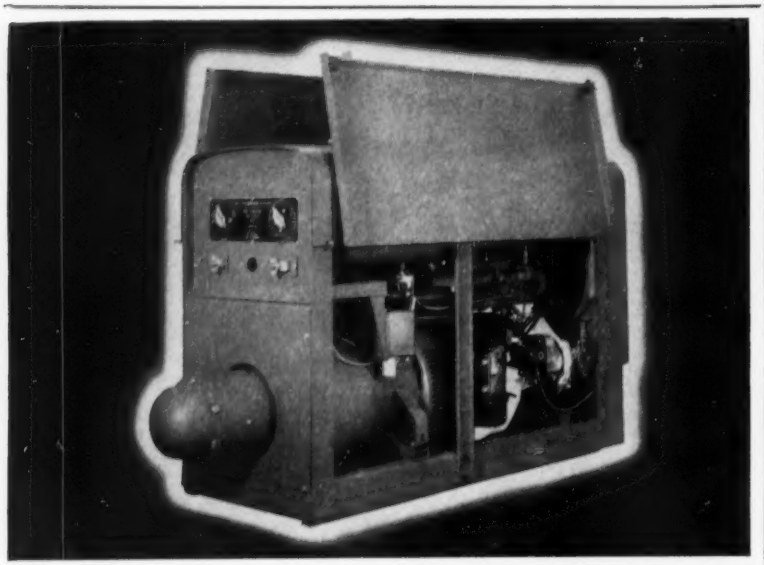
On the next Sunday the job was to pick up the girder and swing it through 64 deg until it reached its proper position. The two derricks lifted and placed the complete girder in 45 min.

During the remainder of the time on that Sunday morning crews fastened bracing members and secured the ends of the main girder to the abutments. Railroad regulations would not allow the derricks to release their support of the girder until its connections were secure and three of the major braces had been bolted in place.

This was the biggest part of the erection job, but the process still had to be repeated for the girder on the other side of the roadway. This side of the bridge is not skewed as much as the other so the girder is only 199 ft long and weighs 202 tons.

To handle it, Harris moved one derrick to the other abutment so that both derricks were on the same side. They could then pick up the entire beam and place it. One derrick had to reach right across the gap carrying one end of the girder.

Erection manager for Harris Structural Steel Co. was J. N. Schnier. Edward L. Guerber of Harris designed the derricks, and Bob Smith was erection superintendent in the field.



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How to widen streets fast

This No. 977 Traxcavator* digs concrete, asphalt and compacted earth, loads a truck every 2 minutes, grades as it goes

Vogel Construction Corp. was widening 1.6 miles of 38th Street, Indianapolis, Ind., when this picture was taken. The job included excavating 40,000 cu. yd. of old concrete, digging up front yards and driveways. Street width was increased from 40 to 80 feet. And most of the work was done by a CAT* No. 977 Traxcavator.

Hard earth, broken concrete and asphalt are tough materials to dig, but the machine's superior pry-out action resulted in full bucket loads. The main problem was keeping enough trucks under the bucket. The No. 977 was loading a truck in less than 2 minutes, and it maintained a good level grade as it dug. Vogel Construction Corp. also found the No. 977 good at skimming asphalt off of old pavement.

Caterpillar-built Traxcavators have been designed for one purpose—to increase your production and cut costs. The No. 977, largest of the line, gives you the power and performance for big road jobs. Its 100 HP engine and ample track surface back up the 2¼ cu. yd. bucket with tremendous digging force. Quick-acting hydraulic controls add to the machine's great maneuverability. It's easy to operate and has maximum job visibility.

Balanced weight distribution makes for good stability on rough terrain or steep grades. The 40-degree tilt-back of the bucket at ground level prevents spillage. And the bucket can be raised almost 12 feet for high load clearance.

Get the full story of this rugged, modern excavating tool from your Caterpillar Dealer. He'll demonstrate the No. 977's performance on your own job, and he stands behind its long, profitable work life with dependable service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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BUILT FOR THE HARD WORK

Here's How State Highway

Reports Gathered by AASHO and Tabulated by ARBA
Show Current State Practices on Retained Percentage

	1. Do you prequality bidders on Highway Construction? YES	NO	2. At what frequency do you prepare progress estimates on highway Construction Contracts?	3. What is time lag between date of estimate and actual payment to Contractor? DAYS	4. What retainage is held back on progress estimates?	5. What is the time interval between Final Inspection and Project Acceptance and payment of Final Estimate. Approx. WEEKS	6. What part of retainage is released before payment of Final Estimate? How and When?
ALABAMA	Yes		Monthly	10	7½	6	Up to 90% with consent of surety
ARIZONA	Yes		Monthly	15	10	— [9]	All but enough to complete job and claims
ARKANSAS	Yes		Monthly Semi-Monthly over $10,000	7	10 may be cut to $10,000 after 50% comp.	16-26	Only enough to cover over-payments held
BUR. PUB. ROADS	Yes		Monthly	10-15	10% first 50% of job	4 to 12	If all OK, 75% retainage paid
CALIFORNIA	Yes over 15,000		Monthly Oftener if necessary	10	10	4	All held if claims - All paid if final delayed
COLORADO	Yes		Monthly	10	10% first 50% work. Total not over 5%	8	Frequently cut to 2% of job, sometimes 1%
CONNECTICUT	Yes		Monthly	15	10% first 50% of work	8	2% of job held until final estimate
DELAWARE	Yes		Monthly	5	10% until 5% of value of job reached	10-20	98% of job released if surety consents
DIST. COLUMBIA		No	Monthly	7-14	10	8	Discretionary - 10% of first 50% retained
FLORIDA	Yes		Monthly	5-12	10% first 50% work 5% until 90% then 2½%	8-12	2½% of job held
GEORGIA	Yes		Monthly	10-14	10% first 50% work 5% total	8	Variable - hold only for over payment
HAWAII	Yes		Monthly	7	10	4	None
IDAHO		No	Monthly	5	5	12-14	None
ILLINOIS	Yes		Monthly - Semi-Monthly on large jobs on request	20	10	14	9% of 10% retained, paid when work 90% done
INDIANA	Yes		Semi-Monthly	23	10	16	None
IOWA [6]	Yes		Semi-Monthly or oftener if requested	10	10	10	None
KANSAS	Yes		Monthly	10	10	12	Normally none - can be cut to 5% held
KENTUCKY	Yes		Monthly	10	10	12	All except 2½%, this with surety consent [7]
LOUISIANA		No	Monthly	15	10	8	When delay in payment 90% of retainage less claims
MAINE		No	Monthly - Semi-Monthly if requested	5	10% first 50% of work	4-20	5% until job complete, then only 2% held
MARYLAND	Yes		Monthly	6-10	10	30	80% of retainage paid if all in order - surety oks
MASSACHUSETTS		No	Semi-Monthly	10	10	10-20	Up to 95% on Surety ok if request. 5% held
MICHIGAN	Yes		Semi-Monthly	15	10	4-16	Reduced to value of incomplete work after 95%
MINNESOTA		No	Monthly	3-5	10% first 50% of work - remainder option	4-8 planned	Discretionary - usually $1500 held
MISSISSIPPI	Yes		Monthly	12-16	10	8-10	Variable when job 90% - Surety ok [8]
MISSOURI	Yes		Monthly except when over $12,500	10-14	10	4-6	80% of retainage especially big jobs
MONTANA	Yes		Monthly	15	10% first 50% of work	2-20	None except on special cases

Departments Pay Contractors

7. Is amount of retainage set by Statute or Administrative determination?		8. Would you be agreeable to holding retainage to 5% for entire length of construction?		9. Would you be agreeable to limiting retainage to 5% for the first 50% of the work, then no additional retainage?		10. Will you request an Advance Revolving Account of federal funds as allowed in '56 Act to make prompt payment to Contractors for work completed?		11. Do you pay for materials delivered to the job before they are incorporated into completed work?	12. If so, on what material and on what basis of payment?
STATUTE	ADM.	YES	NO	YES	NO	YES	NO		
Statute		Yes			No	Yes		Yes	50% of any materials delivered to job
	Adm.	(1)	(1)	(2)	(2)	Possibly		Special cases only	50% to 60% dependent on conditions, Steel, Pipe, surfacing
	Adm.	Possibly			No	Yes		In some cases	Steel, over $5,000
Statute		Yes (3)		Yes (3)			Not applicable	Yes	Steel, cost delivered (4)
Statute		(1)	(1)	(1)	(1)	Possibly		Yes	90% - any material for job
	Adm.		No		No	Yes		No	Sometimes - in special cases allowance on receipted invoice
	Adm.	Yes			No	Undecided		In some cases	Steel - on receipted invoice.
	Adm.		No	Yes			No	Yes	Steel - Aggregate - 90% cost
Statute		Yes			No	Possibly		Yes	Steel etc. on site. Value only
	Adm.		No (5)		No	Yes		To a limited extent	Various materials on a predetermined rate.
	Adm.	Yes (6)			No (6)		No	Some	Structural Steel - 75% bid price
	Adm.		No		No		No	Yes	Actual cost - any materials
	Adm.	Yes			No	Yes		Yes	All materials - 50% unit price
Statute			No		No (7)	Yes		Yes	Non perishable materials - 90% cost
	Adm.	Yes			No	Yes		No	
Statute		Yes		Yes		Yes		Yes	Any or all materials
Statute			No		No	If needed		Yes	Seldom - Reinf. mesh only case
	Adm.	Yes			No		Not anticipated	Yes	Structural steel only 60%
Statute		Yes			No	Yes		Yes	Steel and Bridge Hdwe. Receipted invoice and insurance required.
	Adm.	Yes			No		Not anticipated	Yes	All if requested - receipted invoice
	Adm.	(8)	(8)		No		No	Not generally	Only if shortage threatens and Contractor is so instructed.
	Adm.		No		No	Yes		Yes	Non perishable material, 80% value $1000 minimum
	Adm.	(9)	(9)		No	If necessary		Yes	Steel & Aggregates - Cost
	Adm.	Yes			No	Yes		Yes	With adequate storage and preservation
	Adm.		No		No		Not anticipated	On special request with surety consent	Steel & Aggregates Invoice less 10%
	Adm.	Yes			No		Not anticipated	Yes	All - 90% delivered price
	Adm.	Yes			No	Yes		Yes	Steel - Invoice price inc. (culverts) Gravel - ½ bid price - or as specified

John Kenska pockets $8 more for every load with New Aluminum Trailer

John J. Kenska, of Elyria, Ohio, has four convincing reasons for buying aluminum dump bodies. Comparison of his aluminum dump trailer with his steel units shows a 16 per cent payload increase that yields $8 more profit per load.

Next, he slashes maintenance costs by $240 a year because aluminum defies corrosive and abrasive attack by coal, slag, lime, cinders and sand. Trips that take six hours with other trailers can be made in five hours with the aluminum unit; 600 hours are saved annually on hauling time. Finally, his state license for the lighter aluminum trailer costs him $59 less than he pays for his steel trailers.

Perfection Steel Body Co., Galion, Ohio, sold John Kenska his aluminum dump body through its Cleveland distributor, Carnegie Body Co. Perfection's use of Alcoa® Aluminum Alloy 5154 cuts empty weight of the 26-foot unit from 13,000 to 9,500 lb. Besides boosting payload, this 3,500-lb reduction cuts fuel costs six per cent traveling empty. Routine washing, the only care required with corrosion-resistant Alcoa Aluminum, takes but an hour — half the time consumed in cleaning other bodies.

When John Kenska tallied up all these moneysaving advantages, he determined to add three more aluminum dump bodies to his fleet. How about you? Thirteen leading manufacturers are ready to fill your requirements. Get their names by writing today to: Aluminum Company of America, 1879-K Alcoa Building, Pittsburgh 19, Pennsylvania.

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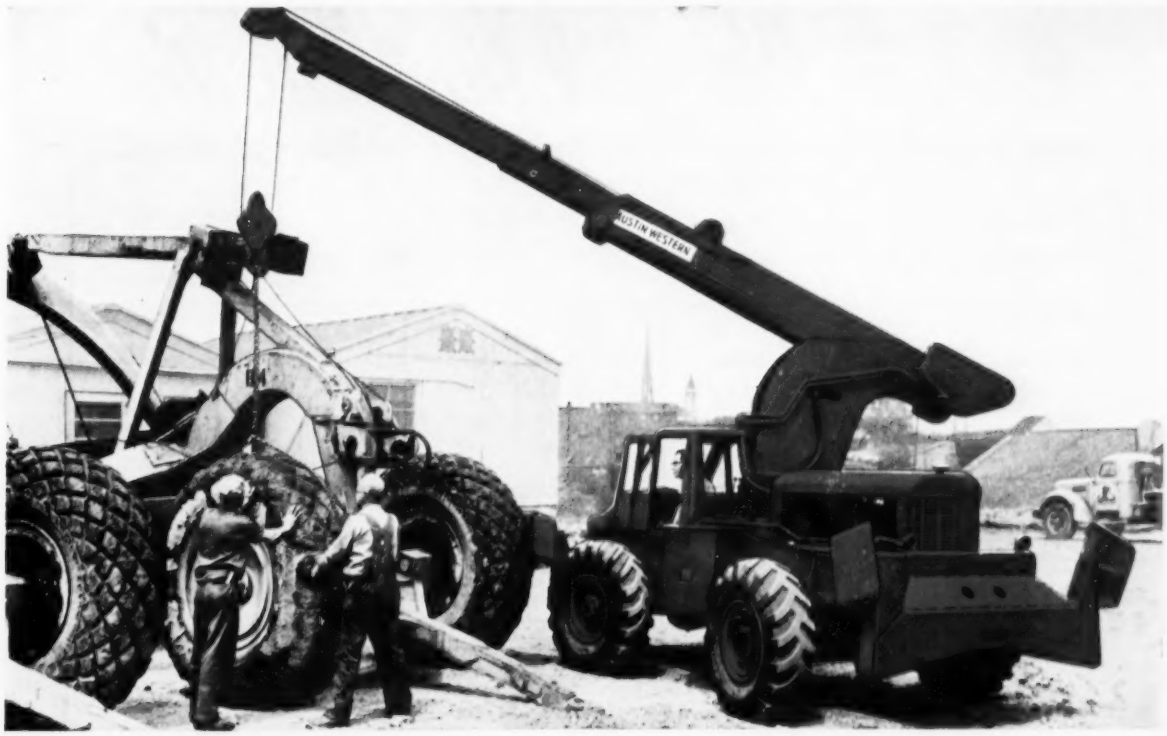
Your Guide to the Best in Aluminum Value

AUSTIN-WESTERN HYDRAULIC CRANE



HUNKIN-CONKEY REPORTS: A-W proves versatility, speed and economy on tough contracting jobs

Early in 1956, The Hunkin-Conkey Construction Co., a major contractor with home offices in Cleveland, undertook a reconstruction job at one of that city's large steel plants. Time studies showed that 95% of the lifts were within the 5-ton range, so a diesel-driven Austin-Western unit was purchased. It was equipped with an 18-ft. extensible boom and 6-ft. manual extension, plus 4-wheel drive, 4-wheel power steer and hydraulic outriggers.

The Company says: "During the first year of use, this crane operated on an average of 2 shifts a day with complete success. Because the construction contractor meets so many different operating conditions, versatility in a machine is most desirable. We found this quality built into our Austin-Western."

Does many jobs well. "With it we install such equipment as conveyors, motors and pumps . . . We use it with a hitch to haul trailers with up to 5 tons of reinforcing steel, and sometimes have hauled as many as 5 trailers in a string . . . In restricted areas we use it to pour concrete brought up from our redi-mix plant in trucks. Maintenance men use it for changing tires or wheels in the yard or out on a job, and to remove engines for maintenance or repair . . . It is a handy emergency unit to have in the equipment storage yard when not out on a job."

Safer to operate. "We find the A-W safer to operate, particularly in congested areas, because it permits less swing of the load. Its boom responds instantly to the operator's touch. The boom also hydraulically extends and retracts while rotating and raising or lowering."

Costs less than half one man's wage. "Our cost record shows a total machine cost, exclusive of overhead, of only $12.11 a day, less than half the operator's wages. The cost, with the operator's wage included, is just over $5 an hour."

For the complete Hunkin-Conkey story, ask for Gould Certified Report No. 5703.

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HOW STATE HIGHWAY DEPARTMENTS PAY CONTRACTORS . . .

continued from page 117

	1. Do you prequalify bidders on Highway Construction?		2. At what frequency do you prepare progress estimates on Highway Construction Contracts?	3. What is time lag between date of estimate and actual payment to Contractor?	4. What retainage is held back on progress estimates?	5. What is the time interval between Final Inspection and Project Acceptance and payment of final Estimate. Approx.	6. What part of retainage is released before payment of final Estimate? How and When?
	YES	NO		DAYS		WEEKS	
NEBRASKA	Yes		Monthly except when over $50,000	14-21	10% first 50% of work, min. $10,000	20-36	Reduced to 3% in pre final
NEVADA	Yes		Monthly	10-15	10% first 50% of work	5	5% of contract held
NEW HAMPSHIRE	Yes	Partial	Semi-Monthly	7	10	25	5% ± by application & consent of surety
NEW JERSEY	Yes		Monthly	10	10	4-6	1% or 125% of incomplete items
NEW MEXICO	Yes		Monthly	10-14	10 (18)	3-4	90% retainage released with surety OK
NEW YORK		No	Monthly except over $50,000 - then semi.	10-14	10% of first 50% (19)	12	(19)
NORTH CAROLINA	Yes		Monthly	15	10% first 50%, 5% thereafter	16	2% variable - retained
NORTH DAKOTA	Yes		Monthly	5-10	10	Variable - some 5 - 6	5% to 7% released
OHIO	Yes		Monthly except over $1,000 then semi.	10-14	15% first 50% variable balance (16)	2-3	Generally not over 1% held (9)
OKLAHOMA	Yes		Monthly - but semi-monthly if justified	20	10	6	0 to 50% released if requested
OREGON	Yes		Monthly	15	10% to max. of 7½% contract.	11	3% retained
PENNSYLVANIA		No	Semi-Monthly	11	10% first 50% of work	12 (9)	2% retained after semi-final
PUERTO RICO		No	Monthly	45	10	4	None
RHODE ISLAND		No	Semi-Monthly	2-5	10	12	85% retainage reduced to 15%
SOUTH CAROLINA	Yes		Monthly	5-10	10	4-12	All but 1 to 2% released Surety must OK
SOUTH DAKOTA	Yes		Monthly	20	10	25	Half when requested
TENNESSEE	Yes		Monthly	10	10	9 min. 60 days legal	90% retainage paid if no claims
TEXAS	Yes		Monthly	10	10	2 (9)	None
UTAH	Yes		Monthly	5-10	5 to 10	8	Various depending on circumstances.
VERMONT	Yes		Semi-Monthly	5-7	10	8-12	About ½ if no claims.
VIRGINIA	Yes		Monthly	10	10	12	None on jobs under $50,000, 5% on jobs over $500,000, scaled between.
WASHINGTON	Yes		Monthly	10-14	15% up to $200,000 job 10% over $200,000 job	6	None
WEST VIRGINIA	Yes		Monthly, except semi-monthly if over $10,000 & requested	12-15	10	6-20	80% retainage may be released if requested.
WISCONSIN	Yes		Semi-Monthly	7-10	15% of completed with 7½% total contract max.	4-52	Twice value remaining work held. Otherwise nominal.
WYOMING	Yes		Monthly	5	10	Limited to 40 days.	1½ times incomplete work held. Surety must OK on request.

(1) Arizona replied 1 to 10 day - obviously meaning time between inspection and acceptance.
(2) Arizona willing to cut retainage to minimum but wants thorough discussion on topic.
(3) Note a prerogative of person supplying answer - personal opinion given only.
(4) Pending legislation would change to 10% for first 50% of work - State would not object.
(5) Do not consider 5% sufficient to cover errors in estimating.
(6) Prefer present procedure - 10% first 50%, then reduced to 5%.
(7) Considering adopting 10% first 50% of work plan.
(8) All except 2½%. 5% of regular 10% upon completion and acceptance. 2½% of the 5% if project has been completed and accepted 90 days or longer and Final Estimate has not been paid. This last release requires consent of surety.
(9) Only on the basis that 10% for first 50% with no additional retainage.
(10) No decision - now under consideration.

7. Is amount of retainage set by Statute or Administrative determination?		8. Would you be agreeable to holding retainage to 5% for entire length of construction?		9. Would you be agreeable to limiting retainage to 5% for the first 50% of the work, then no additional retainage?		10. Will you request an Advance Revolving Account of federal funds as allowed in '56 Act to make prompt payment to Contractors for work completed?		11. Do you pay for materials delivered to the job before they are incorporated into completed work?	12. If so, on what material and on what basis of payment?
STATUTE	ADM.	YES	NO	YES	NO	YES	NO		
	Adm.	Yes on large jobs			No	Yes		Yes	All steel, 50% unit price
Statute			No		No		Not anticipated	Yes	Steel - piling - gravel if amount large
	Adm.	Yes on large jobs			No		No	Yes	Steel & bridge items - Cost.
Statute		Yes			No	If needed		Yes	All - 80% receipted invoices.
	Adm.	(08)	(09)	(08)	(09)	Yes		Yes	Steel etc. 50% unit price, Base & surfacing - 75% unit price
Statute		Yes			No	Not determined		Yes	Most materials - set schedule
	Adm.		No		No		No	Yes	Large items - 75% bid price
Statute			No		No	Yes		Yes - Some	Produced materials - 50% bid Steel-culverts - receipted invoice
Statute			No		No		No	Yes	Terms as directed
	Adm.	Yes			No	Yes		Yes	Aggregate full when over $10,000. Structural steel - 60% unit price Concrete Piles 50%
Statute		(09)	No (08)	(09)	No (08)	Yes		Yes	Non perishable items - 90% cost.
Statute		(06)	(06)		No	Yes		Yes	On approved metal products stored on site
Statute		Yes			No		No	Yes	75% actual cost
	Adm.		No		No		Not anticipated	Occasionally as planned	90% cost or 70% bid, which ever is lesser
	Adm.	Yes			No		No	Yes	Various materials on a predetermined basis.
	Adm.	Yes			No		No	Yes.	Aggregated Steel 50%
Statute		(02)	(02)	(02)	(02)		Not anticipated	No	Only on rare circumstances
Statute			No		No		No	Yes	Various
	Adm.		No		No	Yes		Yes	When provided in contract - 75% cost
	Adm.		No		No		No	If in short supply	⅔ cost
	Adm.		No		No		Not anticipated	Yes	Various materials on a predetermined schedule
Statute			No		No	Yes		Yes	90% cost
	Adm.		No		No		Not at present	Yes	Actual delivered materials - Usual retainage
	Adm.	Yes			No	Yes		Yes	Most materials - cost less 15%
	Adm.	Yes		Yes			Not at present	Yes	Actual cost - timber - steel - gravel

(02) 90% complete - Surety OK - 50% grading - 75% bridges - surfacing - pavement i.e., 5% held on grading - 2½% on others.
(06) For contractors who expedite - 10% first 50% - others - 10% all the way - incentive plan.
(08) Two types - with bond - 10% first 50%, without bond 20% of total. Release ½ on bonded jobs, 75% of 20% on non bonded.
(09) 15% up to 50% completion and 115% of uncompleted work after 50% completion.
(10) Not over 97% of contract can be paid prior to completion. 7½ not enough to cover errors - damages - claims.
(11) Will agree to 10% first 50%.
(12) Current statute requires 10% retainage until project is completed and advertised for 60 day period.
(13) Apparently same as footnote (1).
(14) Reports from 2 BPR regions.
(15) Interest payment 5% to contractor on monies retained beyond 90 days.

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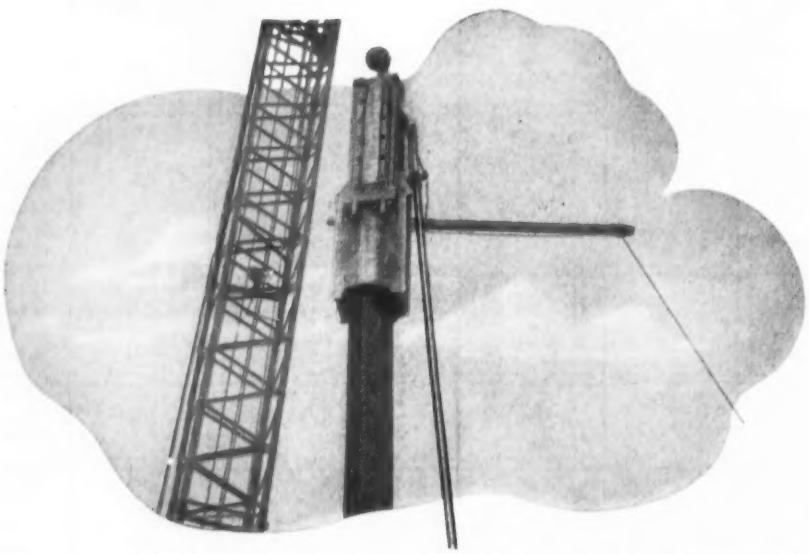

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LOADING—Straddle-dump carrier gets set to pick up bolster-load of steel. All materials from wrecked buildings go directly into bolsters to save rehandling.

DUMPING—Lifting bar carrier engages hooks on bolster to dump load.

Carriers, Bolsters Cut Handling Costs

EFFICIENT HANDLING of materials is the key to successful demolition work, and Cleveland Wrecking Co. of Cincinnati, Ohio, has developed a slick system that keeps handling costs at a minimum.

Cleveland's system is built around effective use of straddle carriers and bolsters. It is proving its value on a big job in Cincinnati that involves demolishing 590 structures to clear an area of 20 square blocks for a city housing project.

Everything taken off this job is palletized. When a steel girder is cut out, the crane sets it on a bolster. Lumber, brick, and other materials all go into bolsters—not on the ground where they would have to be rehandled.

Cleveland has an assortment of specially built bolsters on the job. Three types get most use:

- Simple wood frame bolsters made from 4x6-in. lumber handle steel, lumber, and similar long, heavy materials.
- Tubular steel racks take pipe, flooring, and other long but light materials that might roll off flat bolsters.
- Steel boxes are for brick and other small size material. Most of these boxes are open at one end to facilitate dumping.

A fleet of four Clark-Ross straddle carriers haul bolster-loads of materials to the firm's processing yard. A carrier arrives at the job, drops an empty bolster, picks up a loaded one, and hauls it across the city at normal traffic speeds.

The company estimates that it would need three or four times as many trucks to handle the same volume of material as the carriers. The reason is that it takes time to load and unload trucks. The carriers are always working—hauling off a loaded bolster or returning with an empty.

A special type of Clark-Ross carrier handles the steel boxes that move brick. It's called a straddle-dump carrier. A lifting bar across the front of the machine engages two "fingers" or hooks projecting from one end of the box and lifts that end up until the contents slide out the other end. It is raised and lowered hydraulically by chain hoists.

HAULING—Carriers travel through city streets at normal traffic speeds. They keep almost constantly on the move. There are no delays for loading and unloading.

By ALBERT C. SMITH, Associate Editor

Canadians on the Seaway •

They Show Daring and Imagination With Concrete Handling and Placing

AMERICANS HAVE NO MONOPOLY on ingenuity when it come to handling concrete. Their Canadian cousins can get pretty tricky, too. In fact, construction jobs along the Canadian section of the Seaway just bristle with clever ideas.

Flexible specs permit the Canadian contractor to exercise a lot of imagination. He can haul concrete in open trucks, pump it, carry it long distances on belt conveyors. Instead of restricting lifts to 5 ft, the Canadian pours any lift he finds convenient. In many cases he pours the full height of a structure in one lift with a traveling form.

Four Huge Locks

A tour of Seaway structures in the Montreal area offers an excellent opportunity to see Canadian construction know-how at its best. Here, the Seaway Authority is building four locks, constructing or modernizing seven big bridges, excavating about 18 mi of channel in the dry, and dredging another 10 mi.

Although the average American is unaware of it, Canada is spending twice as much as the United States to build its share of the St. Lawrence Seaway.

Most of the Seaway concrete in the Montreal area goes into four locks. The first is at St. Lambert, just across the river from Montreal. Providing a lift from 2 to 20 ft, it is designed to overcome the difference in level between Montreal harbor and the Laprairie Basin. Like all locks on the Seaway, its 768x80-ft intermediate section between gates will accommodate ship with a 25-ft draft. And on either end of the lock, long approach walls are being built to moor ships and also guide them to the gates.

Working the job under an $8-million contract is the joint-venture firm of McNamara-Pigott-Peacock.

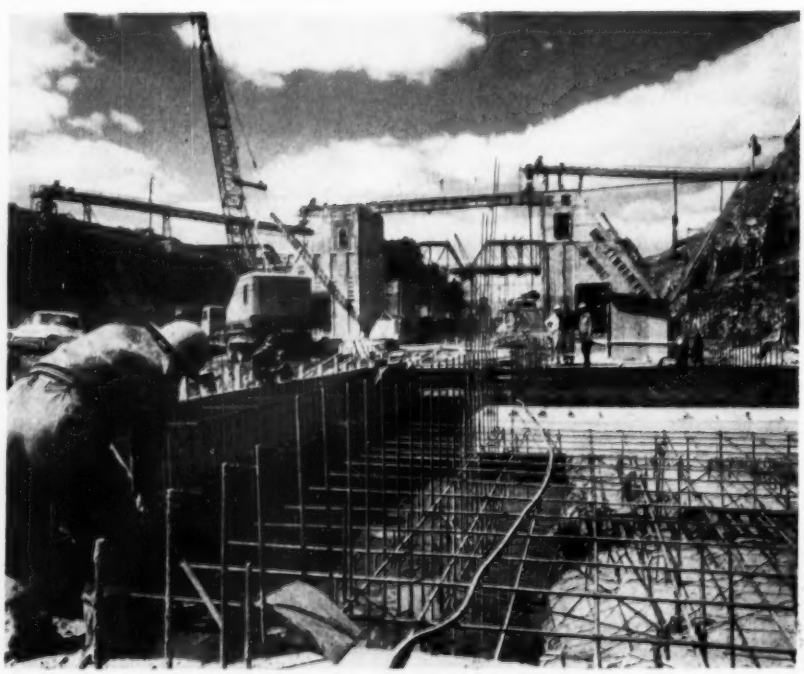
Upstream about 9 mi is Cote St. Catherine lock, built for a lift of 30 to 40 ft where the canal cuts overland to bypass the Lachine rapids. Canamont & Canit Construction Co. is running the job under a $7-million contract.

Beyond the lock, the Seaway continues across land for several miles in open cut. Then it enters Lake St. Louis, which carries it about 15 mi upstream to Beauharnois. Here, the Seaway enters two locks which are designed to provide the 80-ft lift from the lake to the navigable power canal now leading to the Beauharnois Powerhouse. Construction of the lower lock is an $11.5-million job run by Canit Construction Co. And its sister lock upstream is a $14.5-million job. United Waterways Constructors is the contractor.

St. Lambert Lock

Although the four locks will have similar dimensions when completed, construction conditions vary widely. St. Lambert Lock is being built behind dikes in the old river bed under the south approach of Montreal's Victoria Bridge. And coordinating construction with bridge reconstruction presents tough access and scheduling problems.

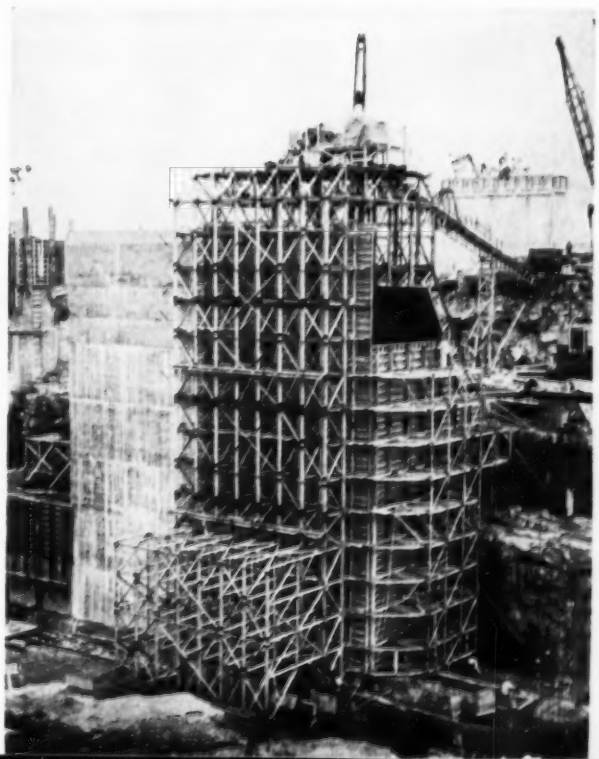
continued on page 128

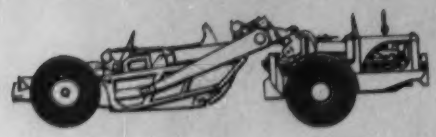


Hammerhead cranes riding on rails quickly swing concrete buckets over high lock walls. Operators have choice of low or high cab.

Traveling form handles 82-ft high pour in single lift. Rigs like this cut handling time, permit fast pouring.

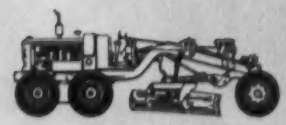
Conveyors speed transportation of concrete around lock job. Series of long flights carry mix to traveling stacker along wall.



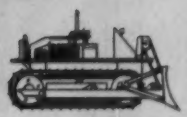


International scraper

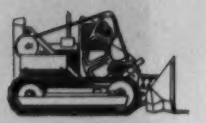
Michigan scraper



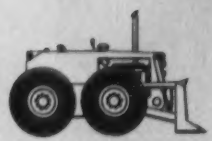
Adams grader



Eimco bulldozer



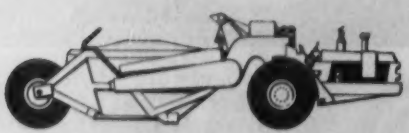
Eimco loader



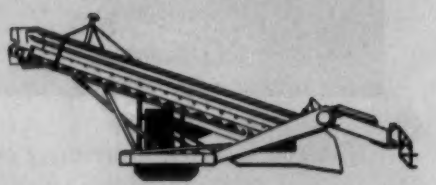
LeTourneau-Westinghouse bulldozer

Michigan bulldozer

Michigan loader



LeTourneau-Westinghouse scraper



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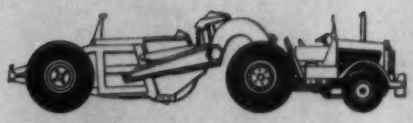
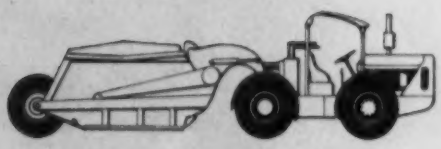
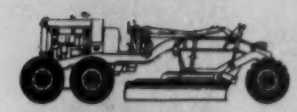


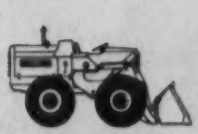
Euclid scraper



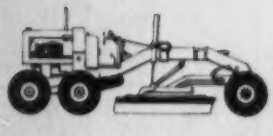
Westfall scraper



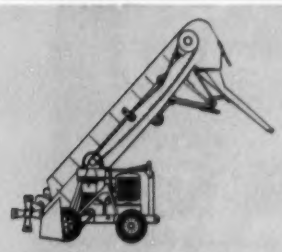
Galion grader



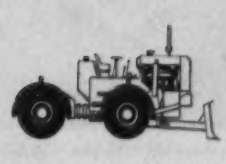
Hough loader



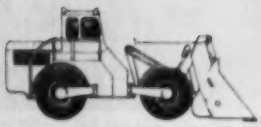
Huber-Warco grader



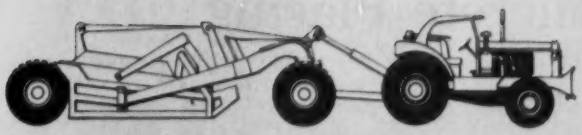
Pettibone-Haiss loader



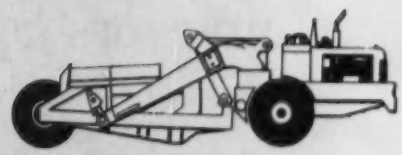
Wagner bulldozer



Wagner Scoopmobile loader



M-R-S scraper



Wooldridge scraper

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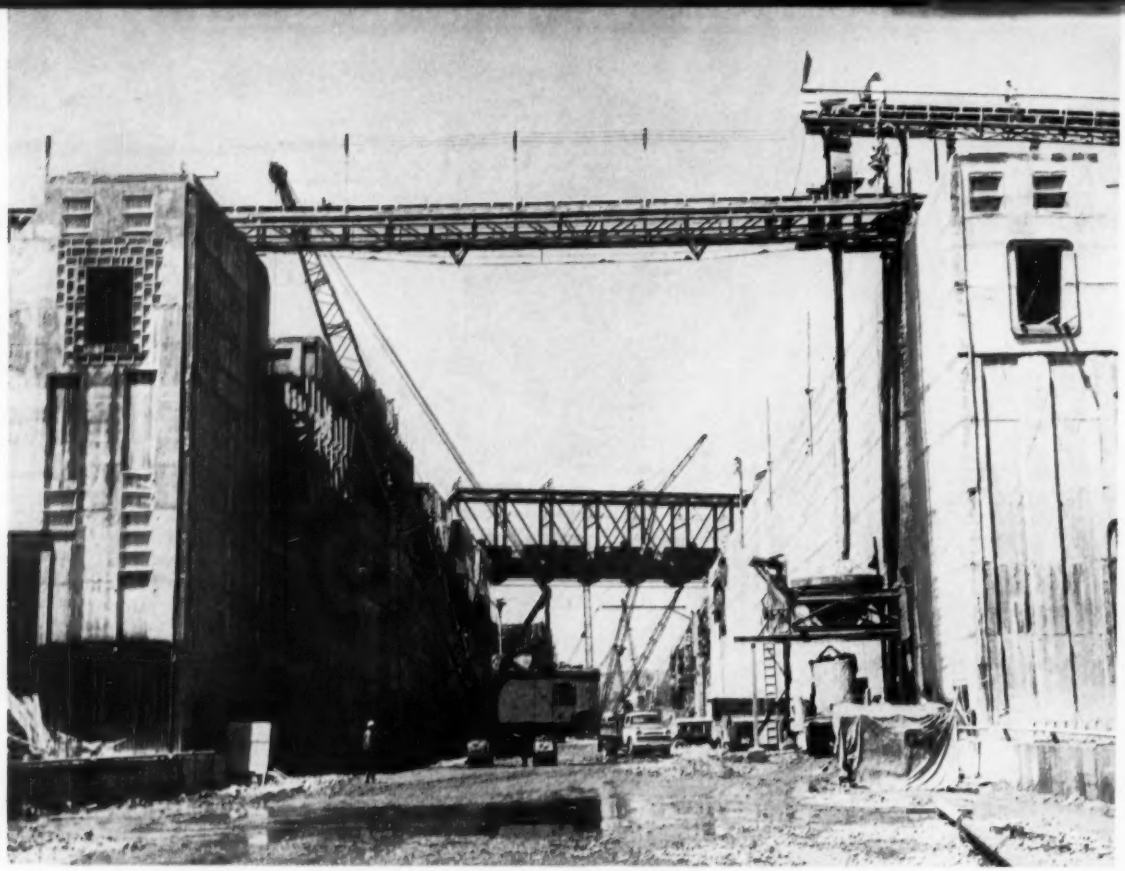


TRANSFER POINT—Concrete at St. Lambert Lock is conveyed from plant to edge of wall where it can be dropped down trunk to waiting bucket on truck. Or it can continue across bridge to stacker-type placer running along outside of opposite wall.

Canadians on the Seaway ● **continued**

Conveyors Speed Concrete Placing

MOBILE PLACER—Dumpcrete truck chutes load of concrete on to belt conveyor mounted across trailer. Conveyor carries mix to elephant trunk which distributes it to forms for lock approach wall. Maximum drop to forms is about 45 ft.

To keep the job on schedule, McNamara-Pigott-Peacock has covered the site with many types of concrete placing devices. Because of the broken character of the job, no single method is adequate, as it is on the other locks. Besides a fleet of 12 cranes, they place concrete with mobile conveyors, stackers, and Pumpcretes. But they're getting record production. In fact, working from two concrete plants, they have poured up to 77,000 yd per month.

Best rig on the job is the traveling stacker. Mounted on parallel rails, it can place up to 110 yd per hr. The stacker consists of an 85-ft boom mounted on a traveling steel carriage that straddles a 700-ft horizontal conveyor supported on the ground. It can place concrete anywhere along the conveyor simply by tripping the belt.

The stacker places concrete fast, but it demands the best in forms. When concrete falls long distances through the trunk hanging from the boom, the form has to be sturdy.

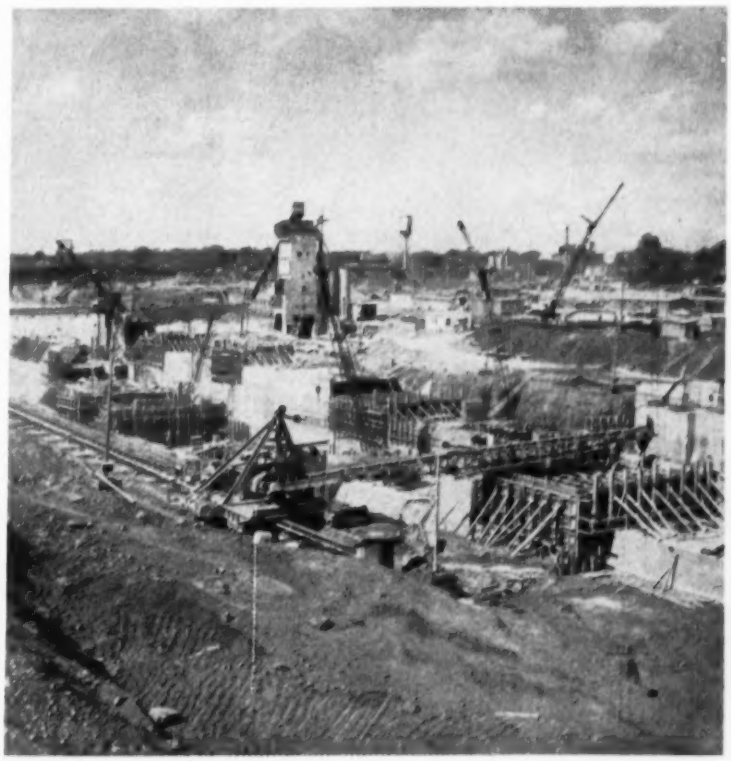
Three flights of Stevens-Adamson 24-in. belt conveyors haul concrete to the 700-ft conveyor. The first flight is a 115-ft inclined conveyor running from the mixing plant to the inside face of the lock wall nearer the plant. Here, the flow of concrete is guided in one of two directions. It ran be transferred to a 110-ft conveyor that bridges the lock, or it can be dropped vertically through an elephant trunk to a hopper mounted in a frame on the floor of the lock's sill. Under the hopper, truck-carried buckets are loaded, then hauled to a crane for placing.

If the stacker is working, concrete is conveyed across the lock and transferred to a 75-ft conveyor that feeds the long horizontal conveyor.

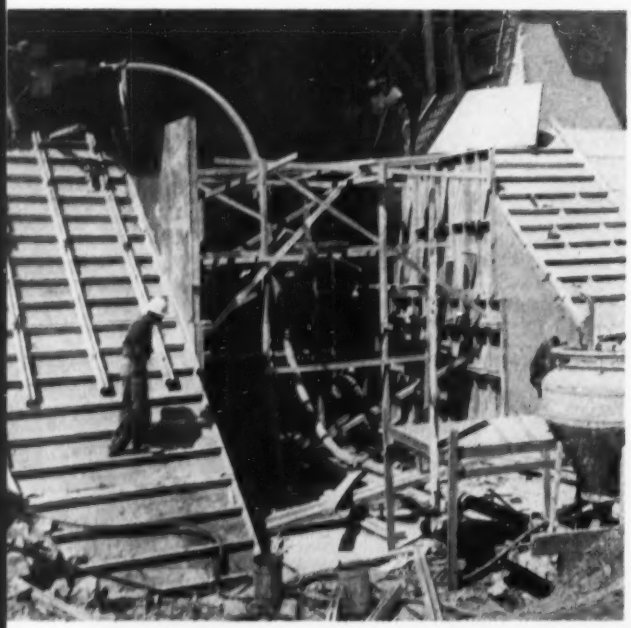
Another interesting placing device developed by McNamara-Pigott-Peacock is a trailer-mounted conveyor for pouring the downstream approach wall. Riding atop the rock wall, the rig drops concrete as much as 45 ft through an elephant trunk to the forms. It consists of a Barber-Greene conveyor mounted across a King low-bed trailer pulled by a GMC truck. Dumpcrete trucks chute concrete directly on to the belt which carries it to the elephant trunk.

continued on next page

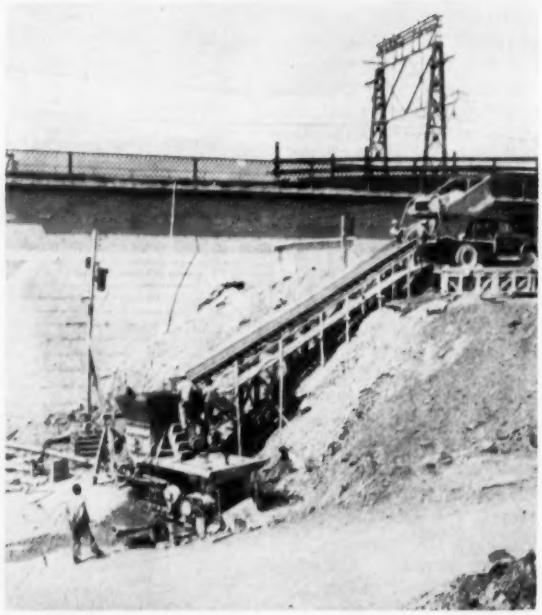
CONCRETE ARTERIES—Series of flights carries concrete from plant to opposite side of wall. Horizontal conveyor in foreground is straddled by stacker.



STACKER—Normally used to handle aggregate piles, stacker with 85-ft boom places up to 110 yd per hr as it is fed directly from plant by 1,000 ft of conveyors.



AIR PLACER—Schwing unit pushes cartridges of concrete through pneumatic tube to wall form in tight place under bridge.



MECHANICAL PLACER—Pumpcrete rigs fed by Dumpcrete handle big pours under bridge where cranes cannot reach easily.

CRANE & BUCKET—Bulk of concrete not handled by stacker on St. Lambert job is placed by large fleet of cranes. Old bridge bisects site, complicates construction.

The inclined end of the conveyor is supported by cable hung from a gantry frame hinged to one side of the trailer. Gantry cables are anchored to the opposite side of the trailer, which is counterweighted.

At the upstream approach wall, it is not as easy to haul concrete to the top of the bank where it could be dumped into the trailer-mounted conveyor. Instead, the contractor plans to remove the boom from the stacker, when it completes its work, and mount it across the body of a modified Euclid truck. In this way, Dumpcretes easily can load the conveyor from the floor of the canal. And an elephant trunk will carry concrete.

Hammerhead Cranes

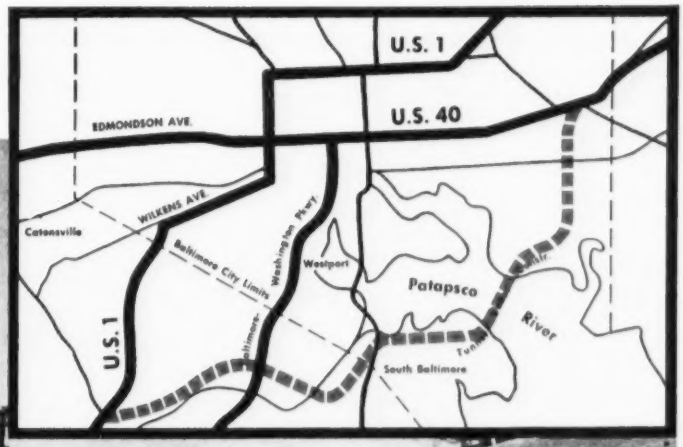
A trio of French hammerhead cranes steal the show at St. Catherine Lock. They are fast, accurate, inexpensive, and easy to maintain.

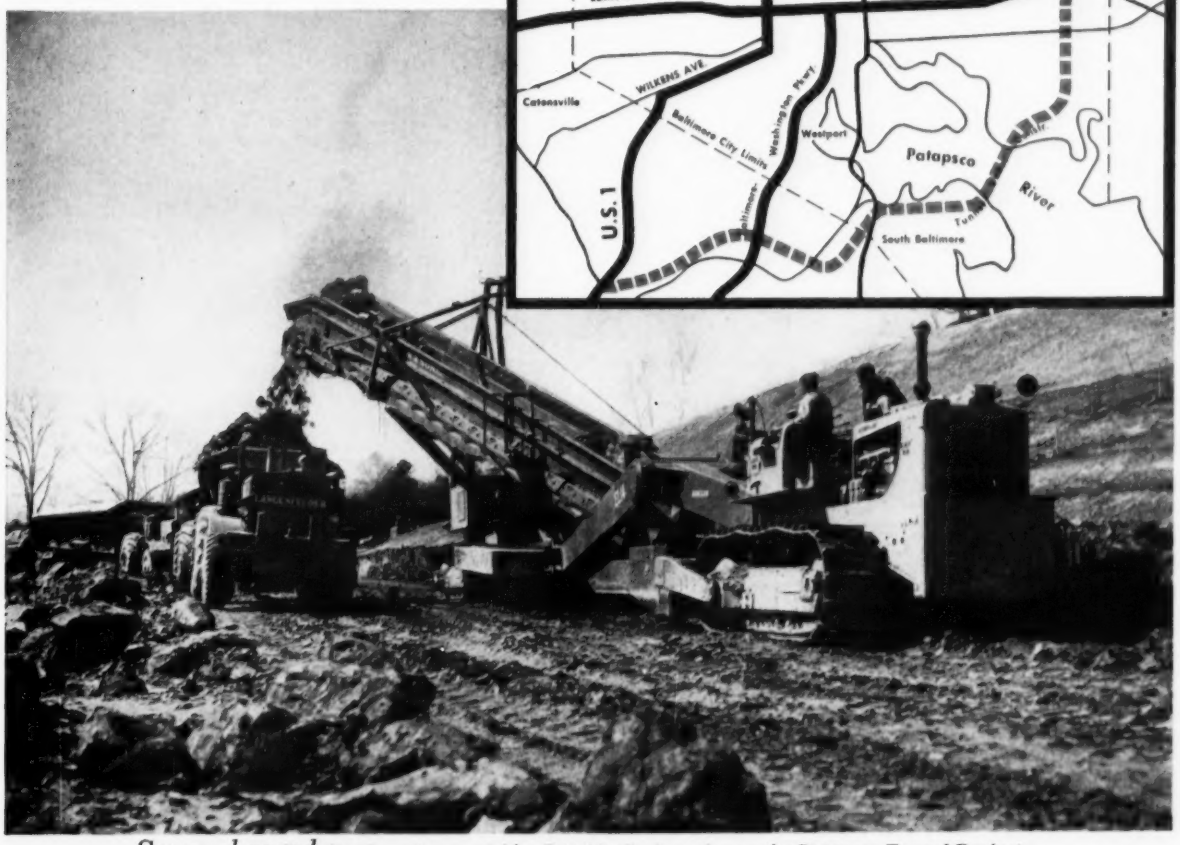
Because there are no obstructions breaking up the job, the lock chamber between the two towering walls is open wide to permit hammerhead cranes to reach anywhere.

Made by J. Weitz Co. of France, the big cranes can place up to 55 yd of concrete per hr in a form 40 ft above ground.

continued on page 132

Major contractor on the approaches for the Patapsco River Tunnel in Baltimore is C. J. Langenfelder & Son, Inc. . . . now building over 15 miles of roads and ramps, including 9.3 miles of 4-lane straightaway.





Super-charged diesel – a Langenfelder D-8 "Cat" – in action on the Patapsco Tunnel Project.

C. J. Langenfelder & Son, Inc., Baltimore,

reports fewer overhauls, lower operating costs with ESTOR D-3

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On the Patapsco Tunnel Project Langenfelder is using *only* Esso lubricating oils and fuels. Consequently, they are enjoying smoothest possible operation...more power and fewer breakdowns.

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FRENCH CRANE—Riding rails, crane travels close to either lock wall. To cross over to opposite track, crane is jacked and trucks are turned on to transverse rails.

Canamont-Canit has three of the rigs on the job, two large and one small. The big machines carry a counterweighted 98-ft boom on a 90-ft high tower. Enclosing two operating cabs, one for low work and one for high work, the tower rotates within a gantry frame that rides on rails.

All operations are powered electrically, and they all may be carried out simultaneously. Supplied by a 550-v line, the rig can travel, rotate, move the bucket on the boom, and hoist it at the same time. This permits the operator to place a 3-yd bucket of concrete in a 2 to 2½-min cycle.

Housed on top of the lower cab, the hoist is powered by a 50-hp motor. Other motors rotate the tower and power the trucks.

Rails are 17 ft apart and 7 ft away from the walls. One track runs parallel to each wall.

To move it across the sill to the opposite set of parallel tracks, the gantry positions itself over

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a transverse set of tracks stretching between the two main tracks. One side of the gantry is jacked slightly, and two trucks on that side are easily rotated 90 deg, then lowered onto the transverse rail. The operation is repeated on the other pair of trucks, the crane rides over to the opposite tracks, trucks again are rotated, and the rig is ready to begin work on the other wall. The entire operation takes about 2 hr.

The crane's biggest advantage is cost. Its initial price is about the same as that for a 1½-yd conventional crawler crane. And its one-man operation plus low maintenance result in low working costs.

The disadvantage of the crane is its capacity. Although it can handle a 3-yd bucket of concrete up to 50 ft out on the boom, it is limited to a 1½-yd bucket beyond that point. Besides, a 3-yd bucket is not a standard size, and is awkward to handle.

However, Canamont & Canit are sold on the hammerhead crane. They like the way it can control the load, especially when lowering into a form. If a foreman signals to lower the bucket a few inches—that's what he gets. And the bucket doesn't bounce like it would on a conventional crane.

CONCRETE TRUCK—Modified Euclid dump body hauls 8 yd of concrete one mile from plant to Lower Beauharnois Lock. Mechanical gate controls flow into 4-yd bucket.

SUPPLYING CONVEYOR—Job-built body mounted on Euclid trucks hauls 6 yd of concrete at St. Catherine Lock, dumps with hydraulic gate. Concrete is going into footing.

Converted Bodies

Feeding the cranes' 3-yd buckets is a fleet of Euclid trucks with converted bodies capable of carrying 6 yd of concrete. Hydraulically operated tail gates control dumping, permitting one truck to load two buckets. Trucks are filled under a 6-yd hopper, supplied by three Koehring 2-yd mixers mounted overhead.

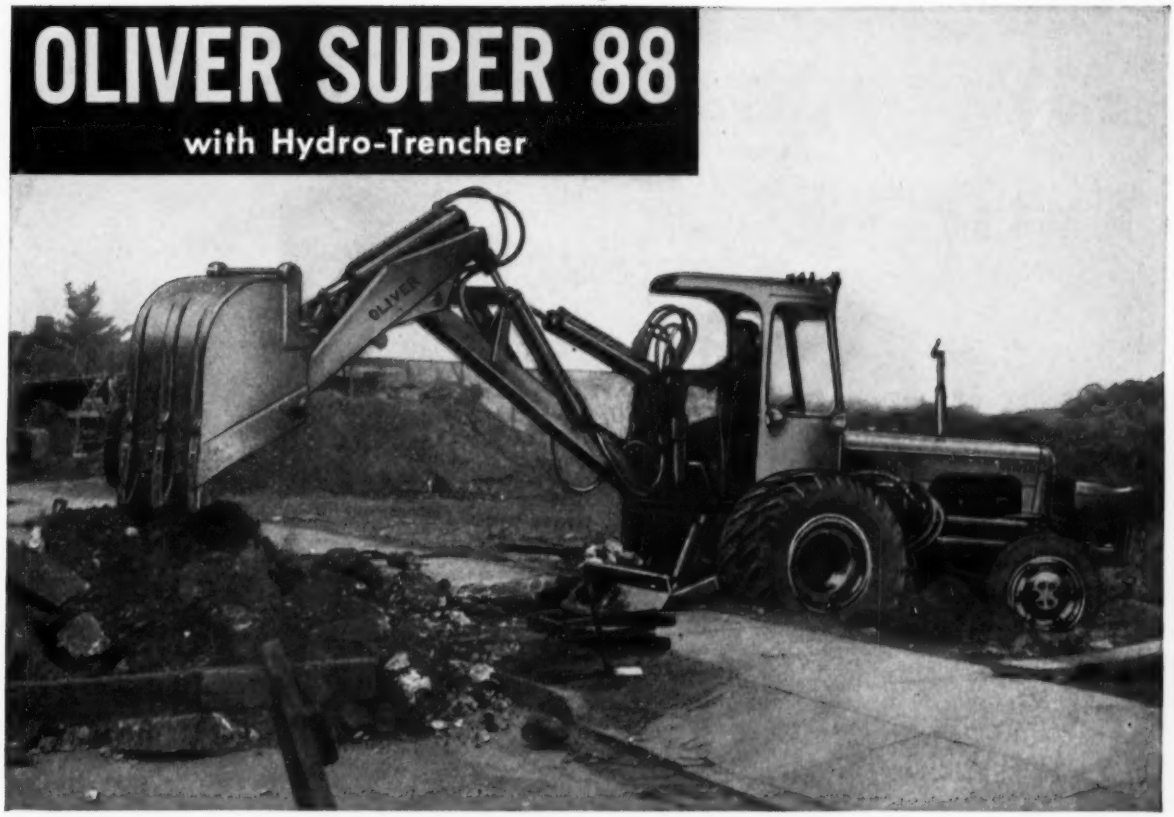
Concrete placing at the two Beauharnois locks is handled entirely from above the walls, rather than from the sill, because both locks are built against high rock walls. At the lower lock, converted Euc bodies with hydraulic tail gates carry 8-yd loads of concrete to the site. Here, a big Marion crane swings 4-yd lay down buckets behind a traveling form.

Concrete placing in the main lock area is just starting at Upper Beauharnois.

continued on page 136

OLIVER SUPER 88

with Hydro-Trencher



"Digs rings around my ½-yd. shovel,"

SAYS NEW YORK CONTRACTOR

Ripping up concrete pavement after use of air hammer is only the start of this tough assignment. With chopping action of hoe bucket the Super 88 loosens and digs rock. Dual hydraulic controls and 180° swing provide a fast cycle.

Nick Garito of Larchmont, N. Y., doesn't mince words about the performance of his Oliver Super 88 with Hydro-Trencher.

On this job at New Rochelle he dug 100 ft. of sewer trench in heavy rock in just 16 hours. Compared with two different types of competitive equipment, he states that the Oliver is faster and requires only one man instead of two. And production, particularly in this kind of work, surpasses his bigger capacity machines.

Bites into rock or frozen ground

The tremendous down pressures of the Super 88 Hydro-Trencher make it possible to force the bucket through the hardest ground. One owner reports digging through as much as four feet of frozen ground at temperatures of 20° below zero.

Another plus value is the ability of the Super 88 to work in tight places where other machines can't maneuver. "My Oliver Super 88 has been so outstanding that three other contractors in the area have bought Oliver 88's," says Nick Garito.

Ask your Oliver distributor for the facts. Or write for literature.

OLIVER

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors and matched allied equipment

STURDY FORMS—Panels for 10-ft lifts are anchored to previous lift with Richmond bolts and Williams ties and pigtails.

FOOTING TRAVELER—Riding on rubber tires, steel-truss-braced form handles 240-yd pours for approach wall footings.

Canadians on the Seaway ● **continued**

Lock Jobs Bristle with Clever

Probably the most significant departures from American methods are in the forms. Here is where the Canadian contractor has found the best expression of his imagination and the easiest way to cut costs.

The 5-ft lift is non-existent. At St. Lambert it is 7 ft, at St. Catherine it is 10 ft, and on the Beauharnois locks it runs up to 82 ft.

High Lifts

Why do they pour such high lifts? There are several reasons. It means a lot less handling of course. And it permits a much greater volume to be placed for each setup. There is less preparatory work because there are fewer joints and it is simpler to heat during cold weather.

Naturally there are disadvantages. A 10-ft lift for instance is too much for a full cantilever form so a jungle of tie rods is required. And it takes a longer time to prepare each block for pouring.

But the Canadians feel that the advantages of high lifts far outweigh the disadvantages. And it's not difficult to see why.

A good example of a sturdy high-lift form is Canamont & Canit's 12-ft high panel. Designed for 10-ft lifts on St. Catherine Lock the rugged forms will be reused from 20 to 40 times.

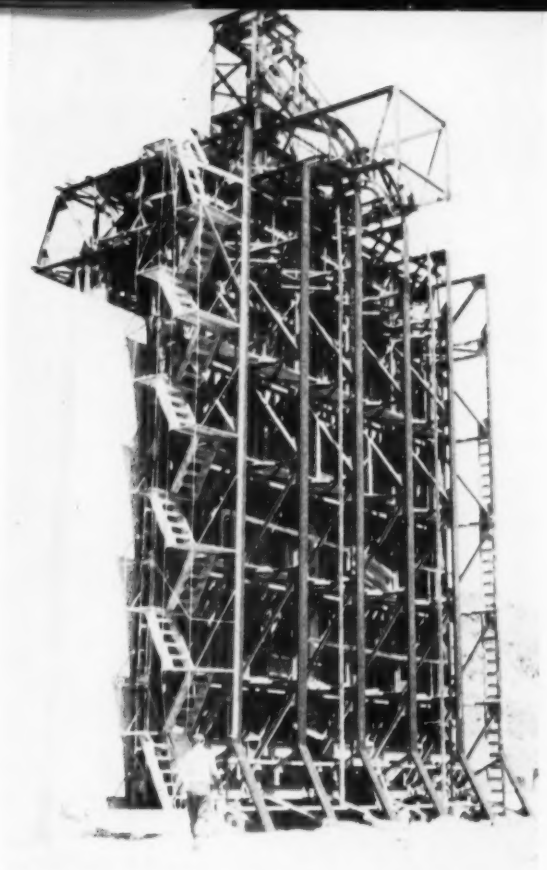
Panel consists of 3x6 sheeting backed with double 4x12 vertical walers spaced 4 ft apart. Ardox spiral nails keep the panel rigid regardless of the number of reuses.

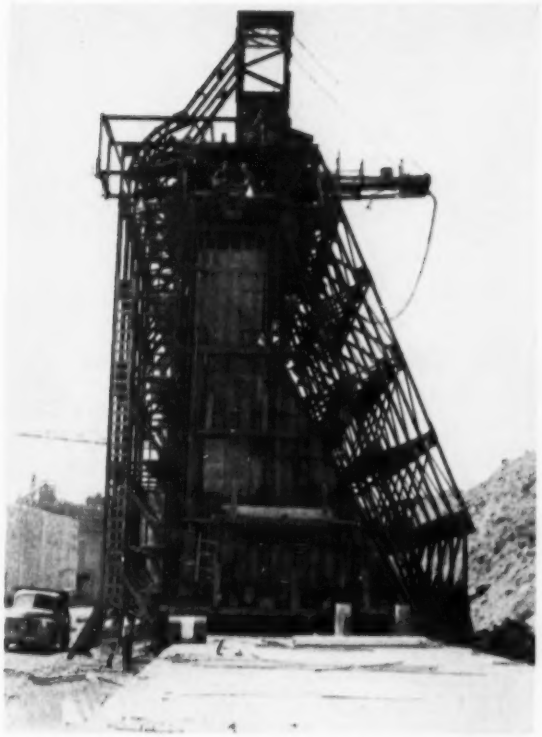
The panel is mounted on a monolith by Richmond bolts anchored about 6 in. from the top of the previous lift and by Williams ties extending from about half way on the panel to pigtails embedded in the top of the previous lift. In this way, only the upper half of the panel acts as a cantilever.

Traveling Forms

Without a doubt, the most dramatic and interesting devices on the Canadian locks are the traveling forms. At St. Catherine Lock, for instance, one huge steel unit is handling thousands of feet of 34-ft high approach walls. And at the Beauharnois locks, two radically different forms are handling the high main lock walls in single mass pours up to 82 ft high.

At St. Catherine Lock, Canamont & Canit has completely mechanized concrete placing in the approach walls. In fact even the footing has its own traveling form. Basically, it consists of a box braced on four sides with steel trusses mounted on rubber tires. Designed to contain 240 yd of concrete, the traveling





APPROACH-WALL TRAVELER—Built on a frame of steel trusses, rig pours 34-ft high wall section 40 ft long. Traveling hoist on top raises its own bucket in guides, dumps it into any one of five hoppers. Elephant trunk spreads mix.

Forming Ideas

footing form requires no internal or external bracing; the steel-truss frame takes the entire load.

Sides are stripped by backing off on twinbuckles. When the sides are loose, tires quickly are inflated, the form raises slightly to free itself, and a tractor pulls it to its next position.

Approach Wall Rig

Following several hundred feet behind, is the huge traveling form that builds the 34-ft high wall. It pours in one lift a 40-ft long section of wall 25 ft wide at the base and 6 ft at the top. And it does it all by itself. Built on a framework of steel trusses, the rig positions and holds form panels, hoists and dumps its own buckets, and even moves itself ahead.

Basically, the form consists of three steel plate panels mounted inside a traveling assembly of parallel truss frames. The exposed vertical face of the wall is formed by a steel-plate panel suspended from the top of the frame by hinges. To position or strip the panel, it can be swung in or out by turnbuckles anchored between the panel and the truss frame.

Like most retaining walls, the rear face is battered, except for a short vertical section at top. This panel is not hinged. Instead of swinging, it moves horizontally in either direction with turnbuckles. The bulkhead moves the same way.

All panels consist of 22-gage metal sheeting over ¾-in. plywood, backed by 6-in. vertical channels 16 in. apart.

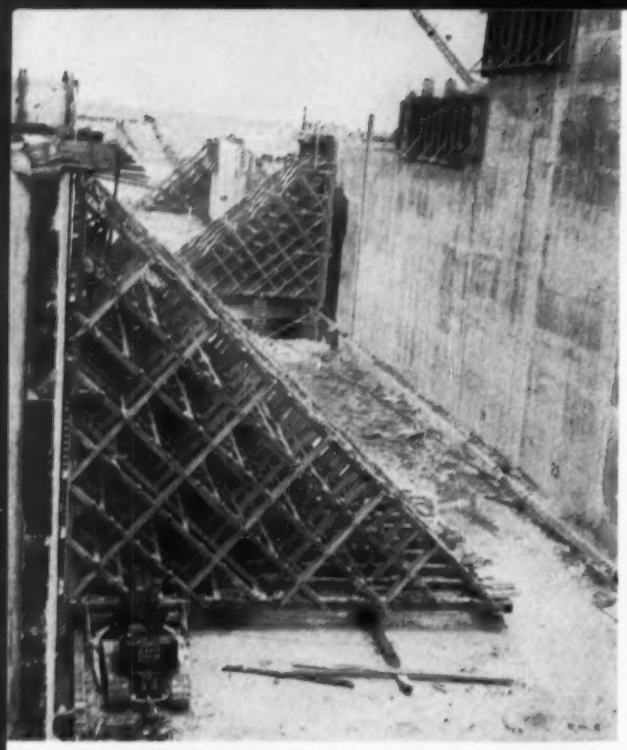
But it's more than a form. It even places its own concrete. Atop the rig, an electrically powered hoist travels back and forth on rails along the full length of the form. Its purpose is to hoist a special bucket of concrete that can ride in any one of five guides up the vertical face of the form.

Loaded with concrete by truck at ground level, the bucket is hoisted up the vertical guides and into a curved guide that dumps it automatically. The traveling hoist, along with its dumping guides, can then move to another set of vertical guides where it lowers the bucket for another load. As the pour progresses, the hoist moves back and forth dumping the bucket into any one of five hoppers to keep the lift rising uniformly. All placing is handled by a single 14-in. dia elephant trunk that rides back and forth under the funnels, emptying one at a time.

When the form is ready for stripping, the panels are retracted with turnbuckles, and the entire rig moves itself ahead on electrically powered wheels. It probably will be reused nearly 100 times.

Lock Wall Travelers

The two biggest traveling forms are at the Beauharnois locks. Because the walls of both locks are built against 50-ft high vertical rock walls, the contractors knew that traveling forms capable of



TIMBER TRAVELER—Shaped like a wedge, frame supports 53-ft high by 43-ft wide panel which forms part of vertical face of lock

built against rock wall at Lower Beauharnois Lock. After stripping, traveler is moved ahead on rails by tractor.

high lifts would be far cheaper than the conventional alternate-block method of placing concrete.

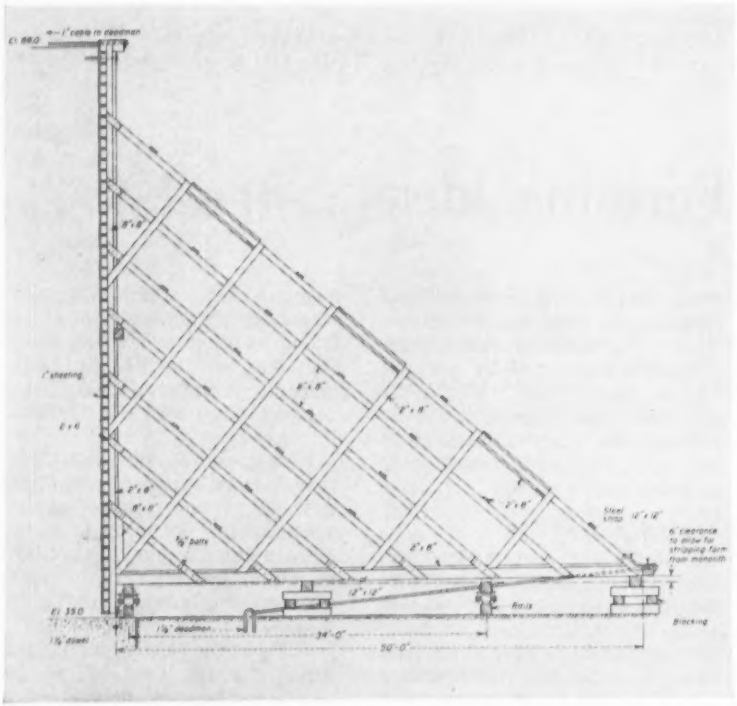
Although job conditions are similar, the two contractors have designed radically different traveling forms. At the lower lock, Canit Construction, Ltd., employs three relatively inexpensive timber forms capable of a 53-ft lift. But at the upper lock, United Waterways Constructors, Ltd., will pour both walls with a relatively expensive single steel form designed for an 82-ft lift, the full height of the wall.

A lot more concrete will have to be poured before all the pros and cons of the two forms are known. But both show a commendable amount of daring and imagination.

Wedge-Shaped Forms

Canit's form on the lower lock is an ingenious device. It is shaped like a wedge, with the hypotenuse on a 45-deg angle. The form's 53-ft-high by 43-ft-wide vertical face is connected to a rigid timber frame.

Operation of the form is simple. In traveling position, the vertical face leans away from the concrete wall, about 6 in. out of plumb at the top. To position the form for pouring, the rear edge simply is jacked 6 in., thereby rotating the entire form and swinging the vertical face into plumb position. The only remaining job is anchoring the form to resist the placing loads. Both the top of the vertical face and the rear edge of the form are tied back to deadmen with 1-in. cables and turnbuckles. And the base of the vertical face is wedged against 1¼-in. dowels anchored in the footing.



POURING POSITION—Form is jacked and blocked along rear edge to tilt panel plumb for pouring. To strip, blocks are removed, frame rotates, and form pulls away.

continued on page 144

NEW MOTOROLA T-POWER* 2-WAY RADIO

Transistorized Power Supply for both receiver and 25-watt transmitter

Long Life Transistors Replace the Vibrator . . .
Reduce Maintenance and "Down-Time"

Already famous for the lowest maintenance and operating costs in the 2-way mobile radio field, Motorola mobile radio is an even better investment now—with the T-POWER unit. The vibrator is gone! . . . replaced by rugged long-life transistors. Gone, too, is the problem of frequent vibrator replacement. Here is a mobile radio with an all-electronic power supply.

New Mounting Flexibility with Plug-In Control Head
. . . Same Basic Unit can be Used for Front or Trunk Mounting

With the T-POWER radio, you are no longer restricted to one type of mounting. Install the complete radio, with drawer unit and plug-in control head, for under-dash mounting. For rear mounting the same basic drawer unit can be installed in the trunk and connected by cable to a dash-mounted control head. And—the same basic drawer unit can be interchanged with the equivalent Motorola Twin-V trunk mount radio models operated from a 12-volt negative ground source.

T-POWER radio is another example of Motorola's continuing leadership in the practical application of transistors in mobile radio. Other tested and proved transistorized products include the Dynamic Microphone and Power Voice Speaker.

Get all the facts.—Write now for literature with complete information.

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The New Champ! →

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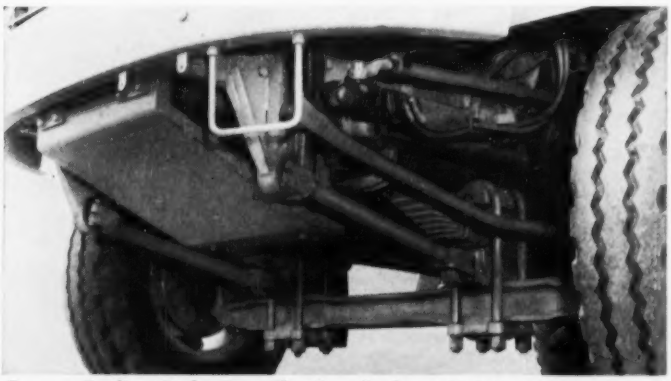
ESTABLISHES NEW RECORDS BY MOVING

Out on the job these specially designed Autocars are beating every claim we made for them. Rated at 15 tons, they haul their huge loads at top speeds up to 39 mph. And their combination of fast axle ratios with a 10-speed transmission permits them to operate at higher speeds on up-grades, too. Whether they're at work on road construction or in a quarry, they're doing the job faster and more efficiently than ever before.

Autocar AP-15

MIGHTY LOADS ON A FASTER TRIP CYCLE

Yes. The AP-15 is designed to do the job better



Frame, Radius Rods, Free-Floating Springs. Reinforced, alloy steel frame with bolted construction is rigid enough to keep components in line and flexible enough to absorb torsional stresses. Heavy-duty radius rods, front and rear, hold axles in alignment with frame. Free-floating springs absorb road shocks and assure long tire life.

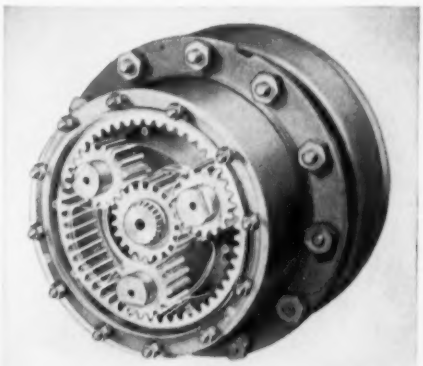
• • •

This Autocar rewrites the book of rules for profitable hauling of fill, aggregate, rock and similar materials. Before you buy your next truck, it will pay you to talk to your White-Autocar Distributor about the rugged, powerful AP-15.

White Autocar

AUTOCAR TRUCKS

AUTOCAR DIVISION · The White Motor Company
Exton, Pa.

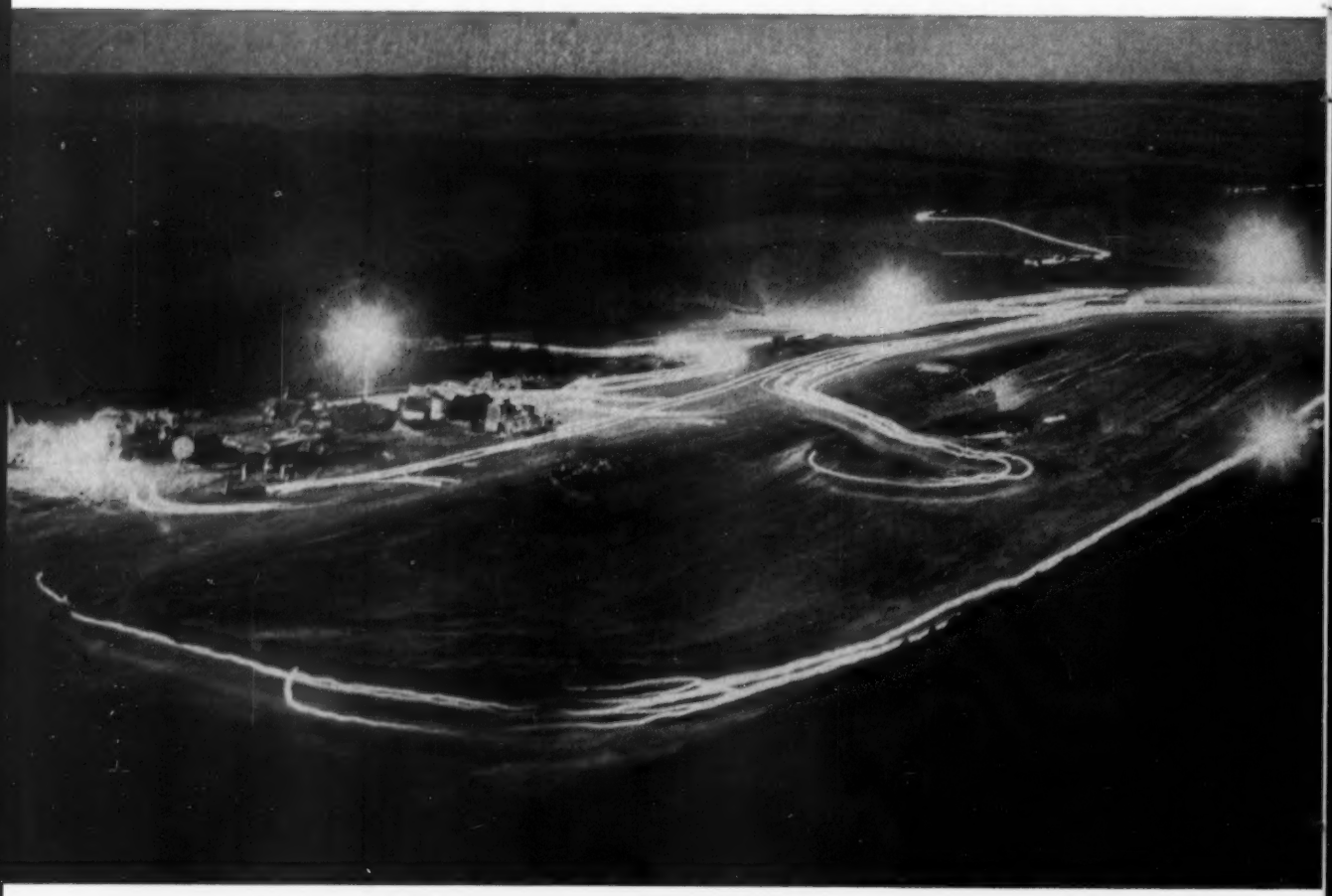


Planetary-Gear Rear Axle. The AP-15 is built around this basic component because it delivers the torque from the powerful Diesel engine all the way back to the rear wheels. In fact it places the highest numerical gear reduction right in the wheels, thus decreasing torque load on axles and differential. It assures long gear and shaft life and makes the units transmitting power as strong and dependable as the rest of this giant truck.

Autocar Driver Cab, Power Steering. Designed and built to provide maximum comfort as well as strength and durability, the Autocar Driver Cab permits the driver to put in a full day without undue fatigue. Full hydraulic power steering makes this monster truck as easy to handle as a passenger car. The unique "Full-Adjust" seat allows the driver to find his own most comfortable position.

Three reasons why

Contractors on the Air Force Academy Project use STANDARD fuels and lubricating oils

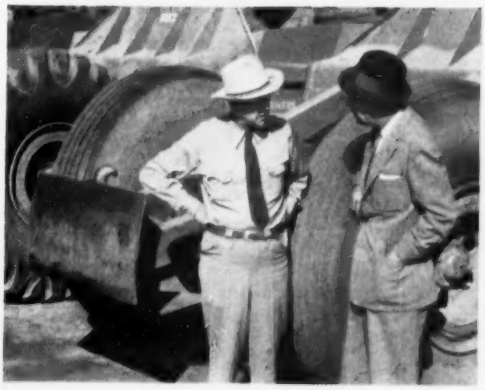


Night shift. $715,000 worth of Paul Hooper, Inc., equipment moved 4.5 million cubic yards of dirt at the rate of 25,000 cubic yards every 24 hours. Leveling site for academic building area included fills of up to 100 feet.

Here are three reasons why prime and subcontractors on the $128 million Air Force Academy project, near Colorado Springs, use STANDARD gasolines and diesel fuels plus STANOLUBE S-1 Motor Oil and other lubricants. (1) To serve contractors, Standard Oil maintains storage facilities for 82,000 gallons of petroleum products at the construction site. There's no time lost waiting for deliveries on this job. (2) Technical service on fuel and lubricants is provided contractors by experienced, qualified Standard Oil men. (3) When they buy from Standard, contractors know they are getting top quality products.

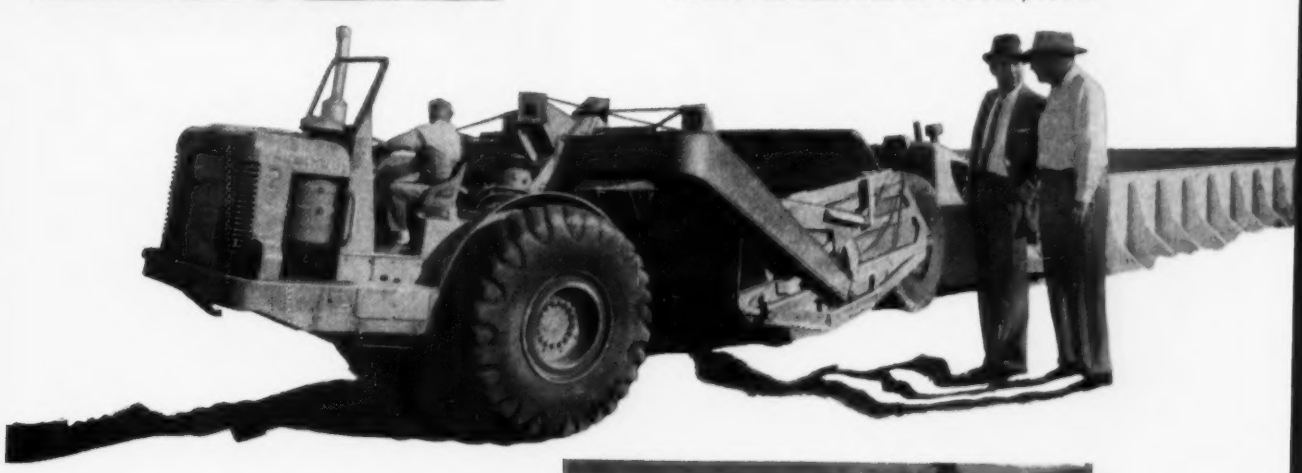
Men and machines moved seven million yards of dirt on this 17-square-mile site during 1956. Work on all phases of construction continues at top speed this year. Grading, utilities, arterial roads, sewer lines, water mains, portable water reservoirs and utility buildings are well on the way to completion. This is the sort of big construction that requires the "big" service Standard Oil gives contractor customers. Maybe you would like service such as this on your job. You can get it anywhere in the 15 Midwest and Rocky Mountain states. Call your nearest Standard Office, or write Standard Oil Company, 910 S. Michigan Avenue, Chicago 80, Illinois.

Lubrication specifications are reviewed by A. R. Gaunt (left), general superintendent of Long Construction, and Standard Oil man, Ralph Dunn. Long Construction has contract for construction of 10,000 lineal feet of concrete retaining walls. Helping contractors with lubrication is a job for which Ralph Dunn is well suited. He has been doing such work for 12 years. Ralph is a graduate of Colorado State College. He has completed the Standard Oil Company Sales Engineering School.

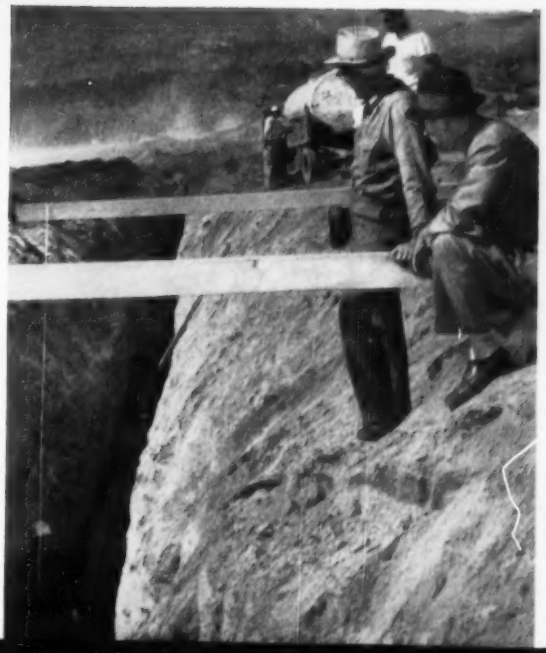


Nowers Construction Company is building 14 miles of primary highways. Here, Nowers Construction's president, Roy G. Nowers, and Ralph Dunn discuss lubrication of Nowers' earth moving equipment.

Despite the severe working conditions, Paul Hooper Construction, Inc., has experienced no mechanical failures due to lubrication. J. L. Phillips, general superintendent for Hooper, welcomes technical service on lubrication from Standard's Ralph Dunn.



Clifford C. Smith, co-owner and general manager of Smith-Nesbitt, and Standard's Ralph Dunn inspect part of sewer, electrical, water, steam and gas lines laid by Mr. Smith's company.



STANDARD

STANDARD OIL COMPANY
(Indiana)

Canadians on the Seaway •

continued from page 138

Although the form is designed to handle a single lift of 53 ft, the Seaway Authority requires a 12-hr halt in the pour at 25 ft. This point is at the top of a large water passage in the wall, and it is necessary to allow the concrete to shrink to prevent cracking when the high lift is added on top.

When the form is ready for stripping, the blocks are removed from its outer edge, it rotates under its own weight and pulls the vertical face from the monolith. The form is pushed to its next position by a dozer.

COMPLETING POUR—Last few buckets of concrete are dumped at top of 53-ft lift as worker plunges vibrator into mass. Big Marion crane swings 4-yd buckets.

Canit built five traveling forms for the job, three for the lock walls and two for the approach walls. Generally, they place about 2,000 yd of concrete a day, each pouring at the rate of 2 ft per hr. Behind the big lock form, the first pour requires 800 yd and the second takes 1,600 yd.

All concrete in the Canadian section of the Seaway has a 1½-in. slump and is made with 5.8 bags of cement per yd and a maximum aggregate size of 3 in.

90-ft Traveler

The most spectacular form on the entire Seaway is the 90-ft-high steel traveler at Upper Beauharnois Lock. Designed and fabricated by Acrow, Inc., the huge rail-mounted rig will handle all 30 of the monoliths in the main lock section.

Unlike Canit's form on the lower lock which handled only the interior vertical face, United's traveler is designed to handle in one lift an entire 82-ft high monolith 40 ft wide and up to 38 ft thick. And instead of pouring alternate monoliths first, then filling in later, it pours one after the other, always guiding itself on the previous monolith.

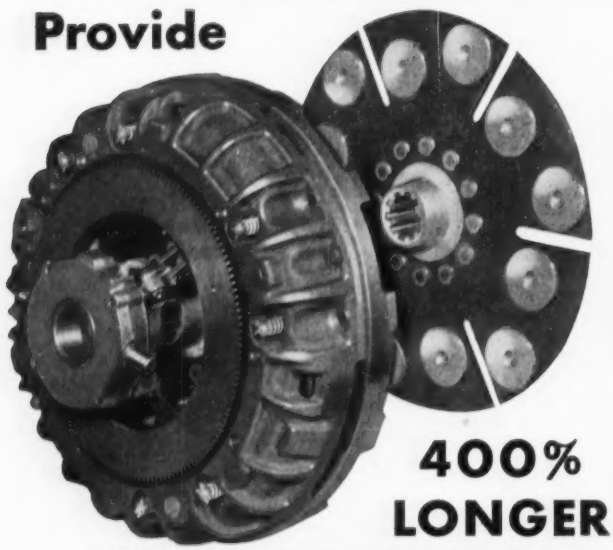
The form consists of 12-ft square panels mounted on a traveling steel-truss frame. It rides on one rail near the top of the rock ledge and two rails on the sill of the lock.

Made of ¾-in. plywood backed by steel channels, panels are adjusted and stripped by turnbuckles installed on the frame. They are constructed in standard sizes so that they can be interchanged

continued on page 149

ROCKFORD

MORLIFE® Over-Center CLUTCHES Provide



400% LONGER WORK LIFE

Reports from a wide range of users state that MORLIFE clutches serve from four to ten times longer than previous types of friction clutches using organic facing materials. Adjustments and plate replacements have been reduced to one-tenth those required by previous clutches. The longer on-the-job hours and increased pay loads which MORLIFE clutches make possible furnish a competitive advantage for machines in which these NEW clutches are used. Increased clutch life results in decreased operation cost of vehicles or equipment. Let our engineers show you how *your* product will benefit through using MORLIFE clutches.

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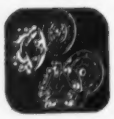
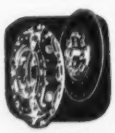


Small Spring Loaded

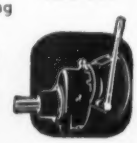


Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs



Speed Reducers

CLUTCHES

with LORAIN 2-Lever, "JOY STICK" POWER CONTROLS

No other shovel-crane can match the easy, effortless, responsive operation of a Lorain—with the new 2-Lever, "Joy Stick" Power Controls. Now, only 2 levers meter positive power to all turntable clutches — at any desired rate for any degree of response, rapidly or slowly, a little or a lot. And the operator still retains the "old time" feel of all operations. By simply moving the easy-acting "Joy Stick" backward or forward — or side to side — or in-between to quarter positions — the operator obtains instant, responsive single clutch operation or a combination of actions. The result — happy operators — plus bigger shovel-crane production!

You'll want to see and try this newest of all ideas for shovel-crane operating control. Ask your Thew-Lorain Distributor to explain — and demonstrate — the new Lorain "Joy Stick" advantages!

THE THEW SHOVEL CO., Lorain, Ohio, U. S. A.

Lorain 2-Lever, "Joy Stick" Power Controls are available for all classes of Lorain Crawler and Rubber-Tire Shovels, Cranes, Hoes, Draglines and Clamshells.

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Most powerful, most economical V-8's

One of 9 reasons why contractors find International Trucks cost least to own!

Costs go down, profits go up with new INTERNATIONAL V-8's that have the highest horsepower in any commercial truck.

You have the power to get started and to keep moving . . . more miles per gallon on regular gasoline. Average speeds are higher with less shifting. You have ample power for all auxiliary equipment.

This is another example of INTERNATIONAL'S policy to build the best truck—to use only the finest parts and components with quality construction throughout—to spend more to build the truck so that it costs you *least* to own!

And INTERNATIONAL Trucks *do* cost *least* to own. This has been proved* by detailed fleet cost records.

Follow the lead of the men who know trucking costs to a penny . . . fleet operators who have made INTERNATIONAL the heavy-duty sales leader for the past 25 years. Make your next truck an INTERNATIONAL.

**Signed statements in our files, from fleet operators throughout the U.S., back up this statement.*

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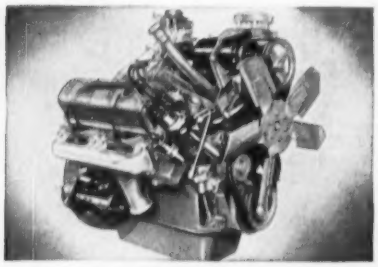
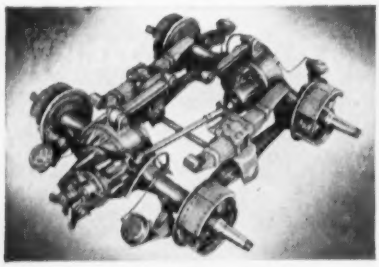
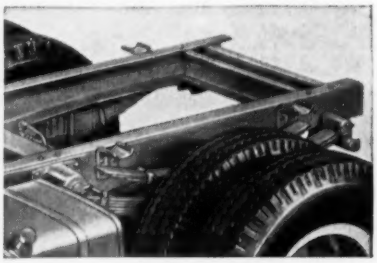
Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors



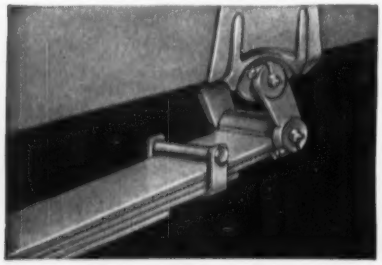
1 **Most powerful V-8's,** up to 257 hp. Highest *usable* horsepower and torque at safe, economical rpm. These *truck* engines are built for lasting, superior performance and low maintenance costs . . . greater fuel economy on regular gasoline.



2 **INTERNATIONAL tandems** give longer, more dependable life. This unit has rubber bushings at all 10 oscillating points to reduce maintenance and lengthen life. Third differential with lock transmits power smoothly and evenly to each axle.

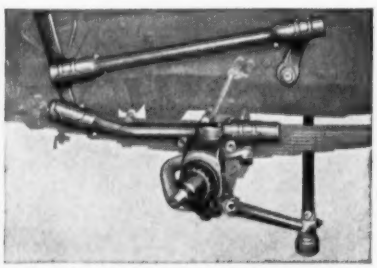


3 **Rugged frame** has plenty of sturdy crossmembers. Non-crystallizing, cold squeezed rivets are used for extra rigidity and proper flexibility on all types of service. Husky front and rear sections add to the safety margin built into every frame.



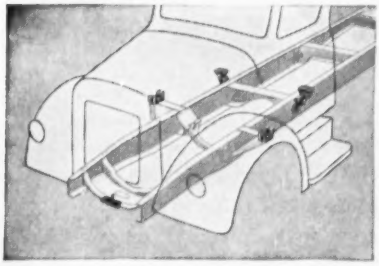
4 **Cradle action front and rear springs** cushion load and driver. Proper design and mounting provide better load support, smoother riding and longer spring life. Rear-shackled front springs for greater stability and increased life.

5 **Full air brakes** are standard or available on most models with lining areas to match the model, load and operating conditions. Twin-cylinder self-centering, self-energizing hydraulic brakes provide safer, easier stops and longer life.



6 **Safer, easier steering** and greater maneuverability result from cam and twin lever gears with controls mounted *ahead* of front axle. Steering wheel is comfortably positioned. Power steering available on most models.

New INTERNATIONAL V-Line trucks are powered by three great new V-8 engines, 206, 226 and 257 hp. Approved clean-burning LPG system also available. Offered in conventional and COE design, 4-wheel and 6-wheel models with GVW ratings from 24,000 to 60,000 lbs., up to 65,000 lbs. GCW. You name the job, INTERNATIONAL has the truck exactly right for your own hauling operation . . . "sized," powered and geared to cost you *least* to own.



7 For cab comfort and long life. Quiet, level ride without transmitting stress to cab, fenders, hood or radiator. It's the result of wide spaced, rear shackle type cab mountings plus exclusive INTERNATIONAL 5-point rubber-insulated suspension.

8 All-wheel-drive models have the extra traction and pull needed for all tough, off-highway operations. Completely factory-built models from 7,000 to 43,000 lbs. GVW. New Travelall shown offers sturdy six cylinder power and performance.

9 World's most complete line. There is an INTERNATIONAL "tailor-made" for every job, half-tonners to 96,000 pounders. Choice of 4-wheel, 6-wheel and all-wheel-drive models, conventional and COE design. Every one built to cost *least* to own.

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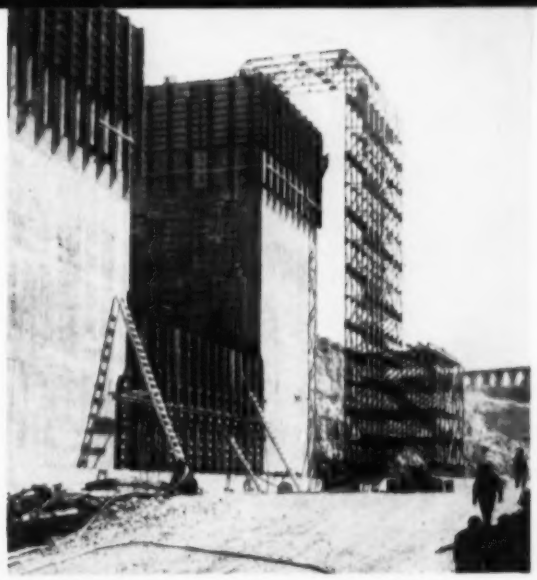
Canadians on the Seaway •

continued from page 144



FORM ERECTION—Riding on one high rail and two low ones, 165-ton form is erected at Upper Beauharnois Lock. Channel-backed plywood panels mounted on truss frames will be adjusted with turnbuckles. Form attaches to previous monolith.

later with conventional forms on other parts of the lock.

In pouring position, the traveler is anchored to the rock wall by eight 2½-in. rods. Placed at two levels, the rods screw into plates which are welded to 1-in. rock anchors. The rods are covered by stove pipes so that they can be removed after the pour and reused.

Only one bulkhead is required because the traveler always pours against the previous monolith. Made of panels backed by steel trusses, the bulkhead is crane-handled in three sections.

After a pour, the bulkhead sections are removed from the traveler and advanced to the next position. Then the traveler is moved ahead by dozer and pinned along one edge to the bulkhead. The other edge of the bulkhead is anchored to the rock wall.

Concrete is hauled from the mixing plant in trucks, dumped into a hopper on top of the rock wall, and conveyed to the top of the form. From here it is distributed through three elephant trunks, and built up at the rate of 4 or 5 ft per hr.

When the concrete lift reaches 25 ft, an 8-hr halt is required to allow shrinkage around a large water passage in the lock wall. At the 50-ft level, a 4-hr halt is necessary because of a gallery in the wall. Otherwise, the pour continues to the 82-ft level without interruption.

United's schedule calls for two monoliths a week. It probably will require a day to set up the form and another day to place the 2,500 yd in each monolith.

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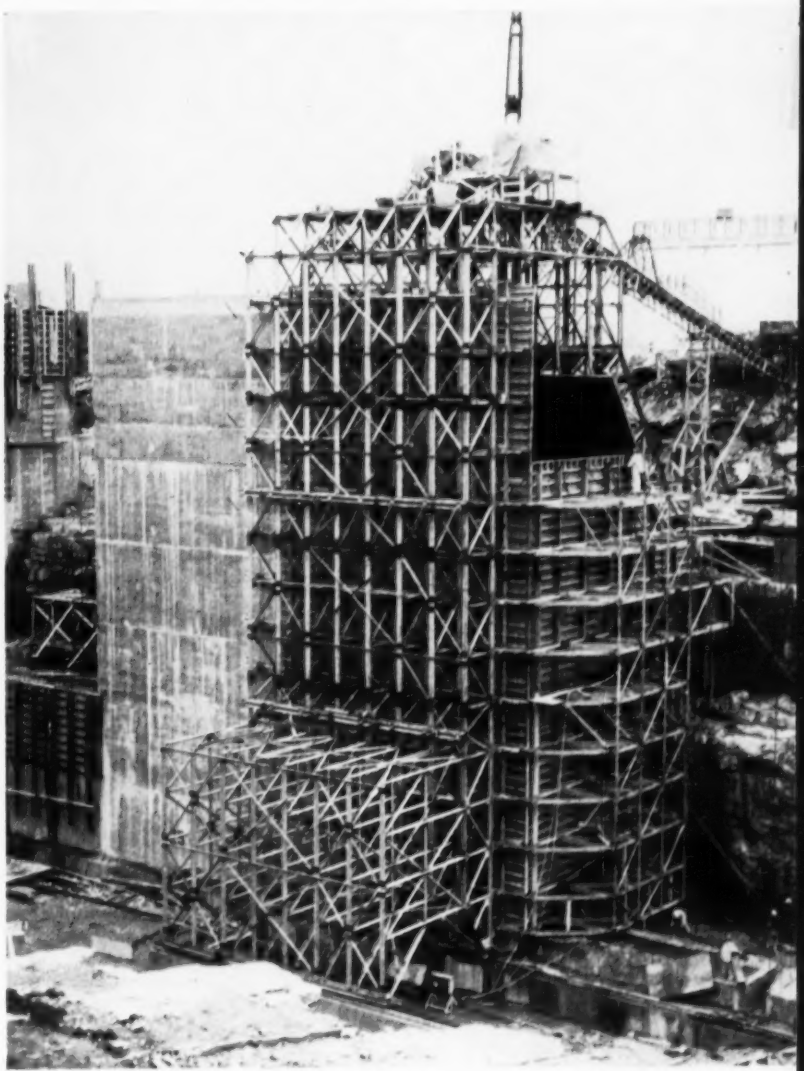
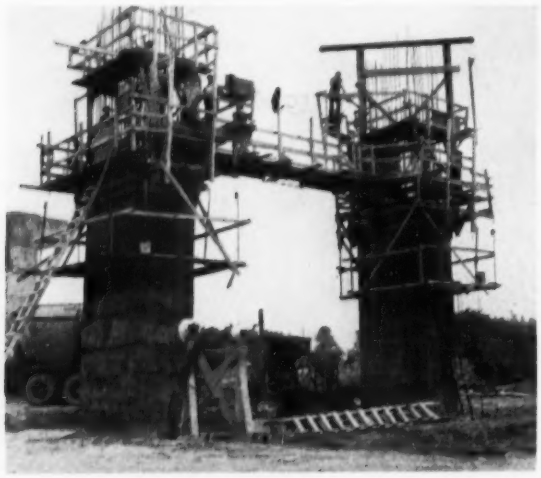


FIRST POUR—Huge traveler nears completion as final panels are added. Eight rods anchor form to rock wall. Conveyor carries concrete to three hoppers on top.

SINGLE-SHAFT PIER—Bucket of concrete is raised to top of slipform and dumped. Heede hydraulic jacks climb special rods to lift form between 15 and 25 in. per hr. Pouring and jacking continue round the clock until pier is topped.



TWIN-SHAFT PIER—One electrically powered pump powers jacks on both forms, permitting construction of both shafts at the same time. Concrete is always hoisted at same shaft, carted to twin. Plumb bobs and leveling devices are checked often.

Canadians on the Seaway • continued

Canadians don't restrict their ingenuity with concrete to mass pours; they can get pretty fancy with bridge piers, too. In fact, 45 of the piers that will support the new high-level approach to the Honore Mercier Bridge are rising fast—and with virtually no need of big cranes, awkward forms, and the usual army of manpower to attend them.

Thanks to a pier design free of batters and setbacks, the contractors are able to build the high shafts with efficient slipforms. Working round the clock, J. D. Stirling, Ltd., completes a 100-ft high pier in two or three days.

Stirling's job calls for the construction of 30 single piers with a 6x14-ft cross section and 15 twin-shaft piers, each shaft having a 9x6-ft cross section.

The operation is simple. After the footing is poured, the contractor carefully sets up a 4- to 6-ft high form on top. Inside, high-strength steel rods 1-in. in dia are positioned vertically in metal sleeves to prevent contact with concrete. These are the rods on which hydraulic jacks climb as they lift the form.

Above the form, a scaffold is added to support the man that unloads concrete buckets. The form itself is a box consisting of a ¾-in. plywood facing backed with double 3x6 walers. The number and spacing depends on the size of the form.

When the form is completed, concrete is built up inside in 8-in. lifts. And as soon as the mix sets sufficiently, the jacks begin raising the form. On the small twin-shaft forms, four jacks generally are adequate to handle the lift. But on the large single shaft forms, six and eight jacks are needed.

Supplied by B. M. Heede Co. of New York, the hydraulic jacks climb by alternate gripping of two sets of jaws around the smooth steel rods. The jacks' lift-

continued on page 154

free-machining

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gives parts like these high strength, toughness

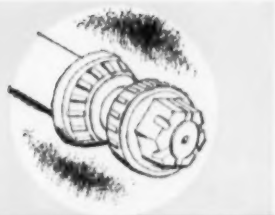
AXLES

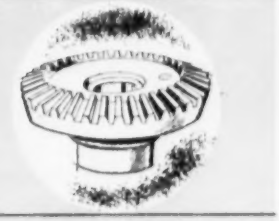
GEARS

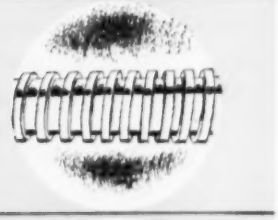
JACK LIFTING SCREWS

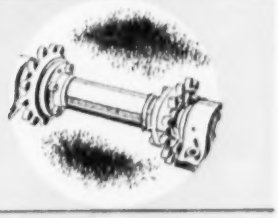
SHAFTS

HANDLING TOOLS









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Max-el 3½ is the ideal general-purpose steel for mining and construction shops. It has all the properties needed for rugged applications: toughness, strength, resistance to wear and impact. More than that, you can buy it from your nearby Crucible warehouse in heat-treated and stress-relieved bars – in the diameters and lengths you need – which do not require final heat treatment after machining.

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with large rugged double-reduction gears is unequaled for dependable, economical operation under toughest conditions. Exclusive "Cradle Ride" suspension, with its long, resilient, floating springs, reduces road shock, stabilizes the load, and improves driver control. Some Timken-Detroit medium and heavy-duty tandems are available with worm drive.

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Timken-Detroit Inter-Axle Differential divides torque evenly between axles, yet permit wheels of one axle to revolve faster or slower than wheels of other axle. Both axles do equal amounts of work. Driving parts and tires last longer. Controlled from the cab, the differential can be locked out at any speed to give positive through-drive.

Timken-Detroit "In-Line" Propeller Shaft Drive gives you straight-through drive. Bearing and gear life is greatly increased because universal joint working angles are materially reduced.

Unequaled Parts Interchangeability means easier maintenance. Almost all parts in TDA® tandems—gears, pinions, differentials and brakes—are interchangeable with parts from Timken-Detroit standard single axles. This means more productive operation time—fast, simple, economical maintenance, smaller parts inventory.

Famous Torsion Flow Axle Shafts are made even stronger through the use of more splines and greater root diameter.

Timken-Detroit Rectangular Shaped Axle Housings are forged from high carbon steel. This shape, plus TDA full strength corner sections, provides greatest strength possible with minimum weight and size.

Timken-Detroit Hypoid Gears with their larger pinions and greater tooth contact give outstanding performance, top efficiency and long life—plus lower maintenance costs.

Dependable Heavy-Duty "P" Series Air Brakes utilize a unit-mounted design to make a compact self-contained assembly. Open type spiders mean lower temperatures, longer liner life. Tapered "Econo-liners" provide greatest thickness in area of greatest wear.

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WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSSES AND TRAILERS

ing force is transmitted through steel yokes framed over the form. A hydraulic pump and its electric motor are mounted on a scaffold surrounding the form.

Ready-mix concrete is dumped into a bucket that is hoisted to the form by a small winch set up on ground. The winch's cable runs up the pier, over a sheave at one end of a horizontal fixed beam, over another sheave on the opposite end of the beam, and down to the bucket.

Concrete is chuted directly in the form if it is a single-shaft pier. But if it's a twin-shaft, the mix is chuted into a cart, pushed across a bridge between the two shaft forms, and dumped.

Speed of jacking varies, but it ranges between 15 and 24 in. per hr. Every 2 or 3 min, the operator switches on the motor and allows the form to be lifted about 1-in. To keep the pier plumb, large bobs are hung from the form and checked periodically. Making sure that all four corners of a form are raising uniformly is another problem. To check this, the contractor runs water-filled transparent plastic tubes around the form to indicate any variation in level. If the form does get out of line or level, corrections are made quickly with a hand pump.

As the form is raised, the concrete beneath is exposed and its surface is finished by workmen standing on scaffolds hung from the form.

Jacking continues round the the clock until the proper height is achieved. At the top of the single piers, a simple adjustment is made in the form to accommodate a T-head. When the pour is completed, the form is removed intact by a crane, placed on a sled, and pulled to the next position. All climbing rods are then pulled out, uncoupled, and moved to the next form.

The entire job, consisting of 25,000 yd of concrete in 30 piers, will be completed in a total of five months.

Seaway Excavation

Seaway excavation in the Montreal area is a study of extremes. In some areas, contractors must build dikes in the river, pump huge quantities of water, cut through tough glacial till. And on the landward parts of the Seaway, it's strictly a rock moving operation—without the hazards of working next to the river but with plenty of headaches for the men whose job it is to get the most out of drill bits. Rock is so hard at one point that only a jet flame device can pierce it.

From the Seaway's entrance, across the St. Lawrence River from Montreal Harbor, excavation is carried out in the shallow river bed along the south shore. For 10 miles, contractors are cutting a huge canal several hundred feet wide and up to 40 ft deep behind high dikes.

Dike building was the first problem on each job. Low preliminary dikes were built first to enclose areas of the river which could then be dewatered. At some points, the dike was extended out into the river to run parallel to the shore for several thousand feet and then back to shore. At other points where the Seaway is far from shore, a dike was built on all four sides.

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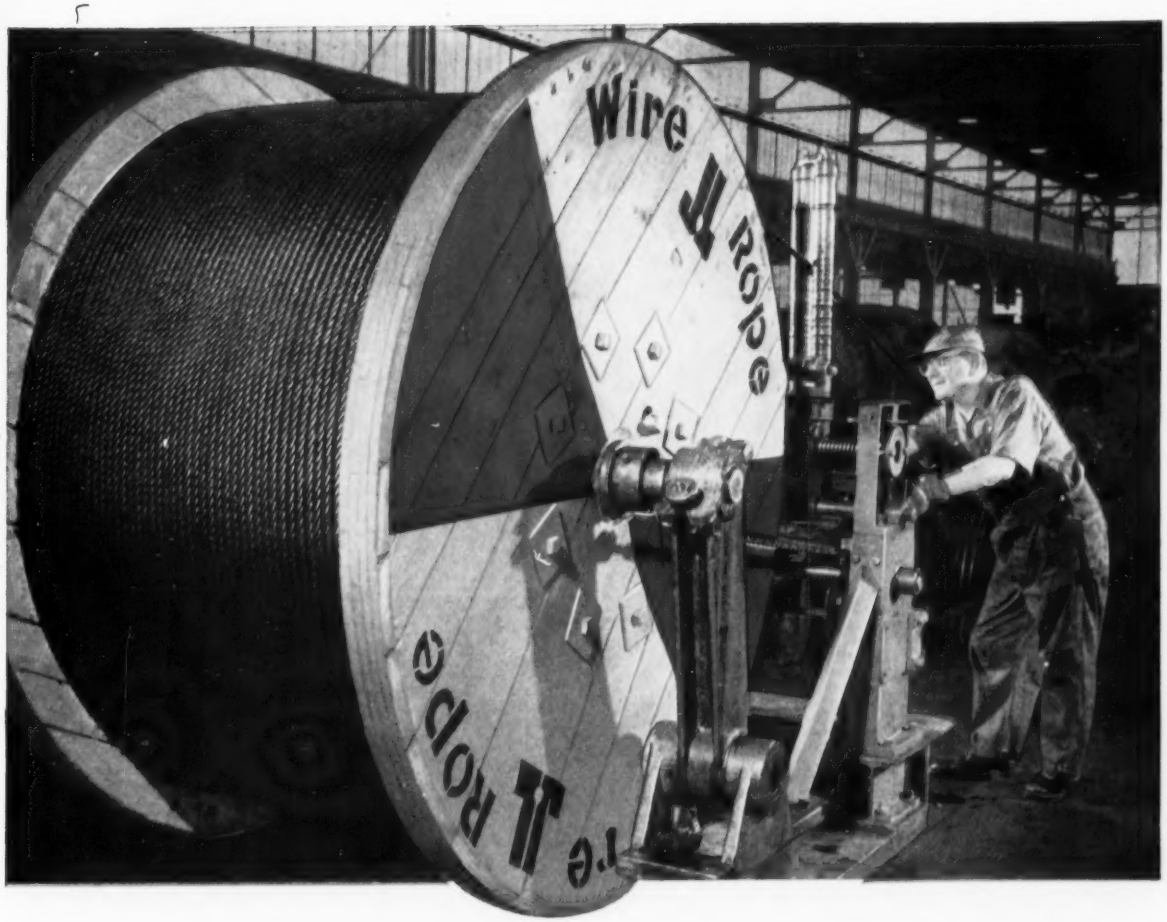

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DIKES ENCLOSE CANAL—Near Montreal, Seaway cuts across shallow 10-mi stretch of St. Lawrence River. Contractors first build dikes, dewater sections one at a time, excavate inside, then haul fill to shore to reclaim land at river's edge.

Canadians on the Seaway • **continued**

Seaway Canal Excavated Behind Dikes

LOW-HEAD PUMP—Popular unit for dewatering is diesel-powered Stang propeller pump.

When an area was completely enclosed, the contractors pumped out the trapped water. And they were almost unanimous in their choice of Stang low-head pumps to do the job. Driven by a diesel engine, these propeller-type units worked exceptionally well at the 30-ft head common on most jobs.

At the entrance to the Seaway, Miron-Freres, Ltd., pumped 1,000,000 gph with three of the big 24-in. units. Miron needed plenty of pumping capacity. The big funnel-shaped cut at the head of the future canal had to be made in an area of the river where the depth of water varied up to 25 ft.

Ordinary dike-building methods were ruled out by Miron. A single rock-fill dike was tried, but it failed to resist the high water pressures. Not until they ringed the huge area with a double dike and drove a line of sheet piling between could they bring in earthmoving equipment. And even then a lot of pumping was necessary.

To remove more than 2,000,000 yd of shale and till, Miron excavates blasted material with three shovels and loads into a fleet of 34 Mack 10-ton trucks. With shovels ranging in size from 2 to 4 yd, they move more than 7,500 yd in two 9-hr shifts.

Dredge Opens Plug

When Miron's big cut is completed next year it will be allowed to fill with water. Then a dredge, which is now digging a channel from the main river channel, will cut through a plug at the forward end of the job, opening the gateway to the Seaway.

Canal excavation in the remainder of the 10-mi riverbed

RIPPER CUTS SHALE—Cat D9 dozer rips shale on Walsh job. Three more units help prepare large areas for scrapers.

SCRAPER LOADS—Caterpillar DW20 scraper is push-loaded through weathered shale by Allis-Chalmers HD21 tractor.

area was all carried on behind dikes. When a section was diked and dewatered, equipment moved in right away to start excavation. Material was hauled mostly to the old river-bed areas between the Seaway and the shore to reclaim the land for industrial and recreational purposes. But a lot of excavated material also was used to build permanent dikes along the river.

Rock varied considerably. At St. Lamert Lock, McNamara-Pigott-Peacock removed nearly 7,000,000 yd of hard shale. They drilled 6¾ in. blast holes with a Bucyrus-Erie 40R rotary, sinking the holes 45 ft deep in a 25x25-ft pattern, 25 to a shot. The dynamite factor was 0.3 lb per yd.

Two P&H 2½-yd shovels handled the bulk of the excavation. Working with a fleet of six Euclid end-dumps and eight Caterpillar PR21 wagons, they moved more than 10,000 yd in two 10-hr shifts.

Ripper Cuts Shale

Further upstream, the river-bed shale was somewhat softer, and Walsh Canadian Construction Co. took a big gamble with scrapers. Even though scrapers have run into trouble on most Seaway jobs, Walsh gave them a chance. And according to project manager Ken Griffith, they're doing the job at far less than the cost of shovels and trucks.

Key to the scraper operation is a team of four rippers, two mounted on Cat D9's and two on Allis-Chalmers HD21's. They quickly cover large areas, penetrating 18 in. into the shale. And

SCRAPER SPREADS—Fast-moving DW20 spreads fill while making U-turn. Machine's speed is ideal on long hauls. Because of dust, contractor extends air cleaner intake.

RIGS BUILD DIKES—Tractor-drawn scraper works well on short-haul dike building. Sheepsfoot compacts at job of Northern Construction Co. and J. W. Stewart, Ltd.

Muck 30 feet deep where a road must go!

...BUT GERKE AND CITIES SERVICE KEEP THE JOB ON SCHEDULE

North of Ladysmith, Wisconsin, Route 27 was practically floating in the swampland it cut through.

To Lawrence Gerke—sometimes known as "Gerke from Merrill"—went the difficult repair job. A job that involved working in a virtual lake, with muck and water up to 30 feet deep!

Under these conditions it would seem almost impossible not to fall behind the three-month schedule for completion . . . but "impossible" isn't in Gerke's vocabulary. And so, he pulled the job through, directly on schedule.

"But I couldn't have done it without the flawless performance of Cities Service lubricants," says the quiet man from Merrill. "Throughout the rugged months of work in muck and marsh, my equipment operated constantly without a single lubrication failure, thanks to Cities Service C-500 Motor Oil and Trojan Greases. When the chips are down, Cities Service comes through."

Mr. Gerke puts it in a nutshell. You can always count on Cities Service when the chips are down. But why wait until then? Why not start using Cities Service lubricants this week? A Cities Service Lubrication Engineer will gladly help you select the precise type for your equipment. Or, if you'd like more information, write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

"Gerke from Merrill" is the way Lawrence Gerke likes to be known. But he's better known for getting things done . . . and he uses Cities Service lubricants for the same purpose.

200,000 Yards of Borrow Dirt fill marsh where 100,000 yds. of muck were removed. Despite grueling work and tight schedule, Gerke finished on time . . . without a lubrication failure!

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

DRILL UNDER ROCK—Walsh found that best way to blast hard igneous intrusion was to drill underneath with Air-Trac.

LOADING INTRUSIVE ROCK—Blasted fragments from 6-ft thick intrusion are loaded into Euclid by Lima 4-yd shovel.

instead of excavating the material immediately with scrapers, Walsh leaves it alone for several weeks, during which it weathers and deteriorates, making it much easier to load.

Because of the long hauls ranging up to 9,000 ft, Walsh brought in a fleet of 13 Cat DW20 scrapers, with two extra horses for standby duty. These fast three-axle rigs move 16 pay yards, but because of a large swell factor, actually carry 22 yd per trip.

Although scrapers move more than three-quarters of the 6½ million yd on the job, there is plenty of work for shovels and trucks. Interspersed in the shale layers are igneous intrusions up to 6 ft thick. And the rock is so hard that drill bits wear out at a rapid rate.

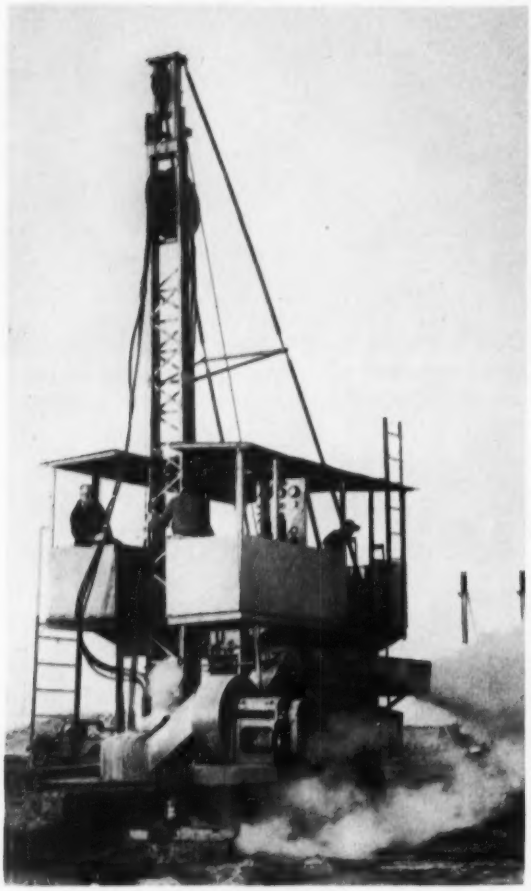
After a short but expensive experience drilling vertical blast holes in the tough rock, Griffith changed his tactics. He dropped the mast on an Air-Trac so that it could drill under the igneous rock layer, and that solved the problem. Holes are drilled 12 ft apart, alternating one 20 ft deep hole with two 10-ft holes. Each shot pulls 30 ft and breaks the rock into fragments ideal for loading.

Walsh handles most rock excavation with a Lima 4-yd shovel, Northwest 2½-yd shovel, and a fleet of 15 end-dump Euclids. Together with scrapers, they move up to 32,000 yd in two 10-hr shifts.

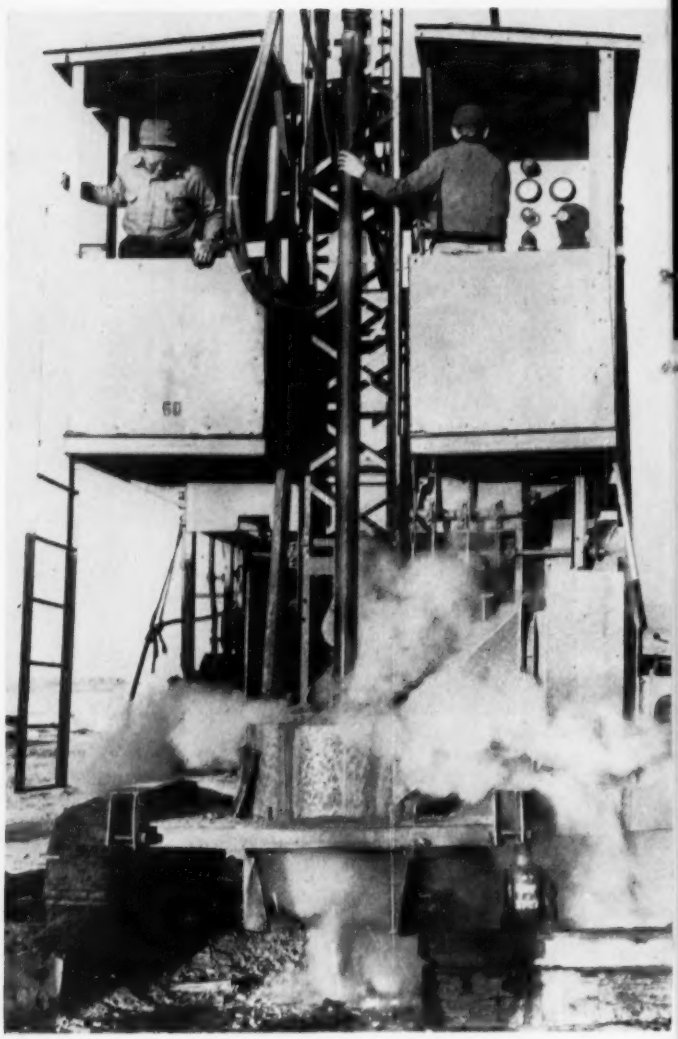
continued on page 161

LOCK CUT—Plug is cleaned up at Lower Beauharnois Lock before big Bucyrus-Erie churn drills are brought in to sink deep blast holes in tough Potsdam sandstone.

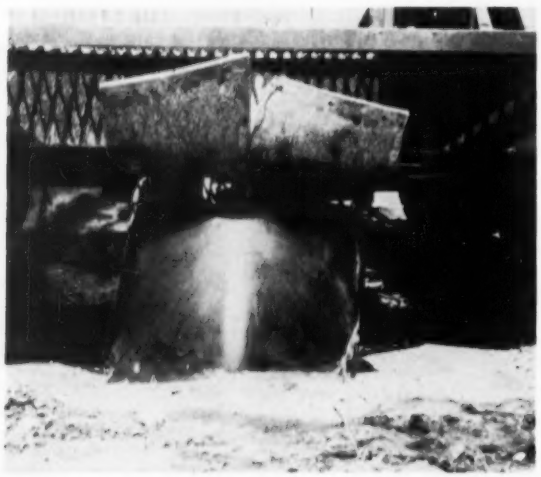
Jet Flame Device Pierces Tough Rock



MODIFIED RIG—Mounted on altered well driller, piercer consumes 10,000 cu ft of oxygen and 40 gal of fuel per hr.



SPARKS FLY—Steam billows as jet-flame device sinks blast hole into tough rock at Upper Beauharnois Lock job.



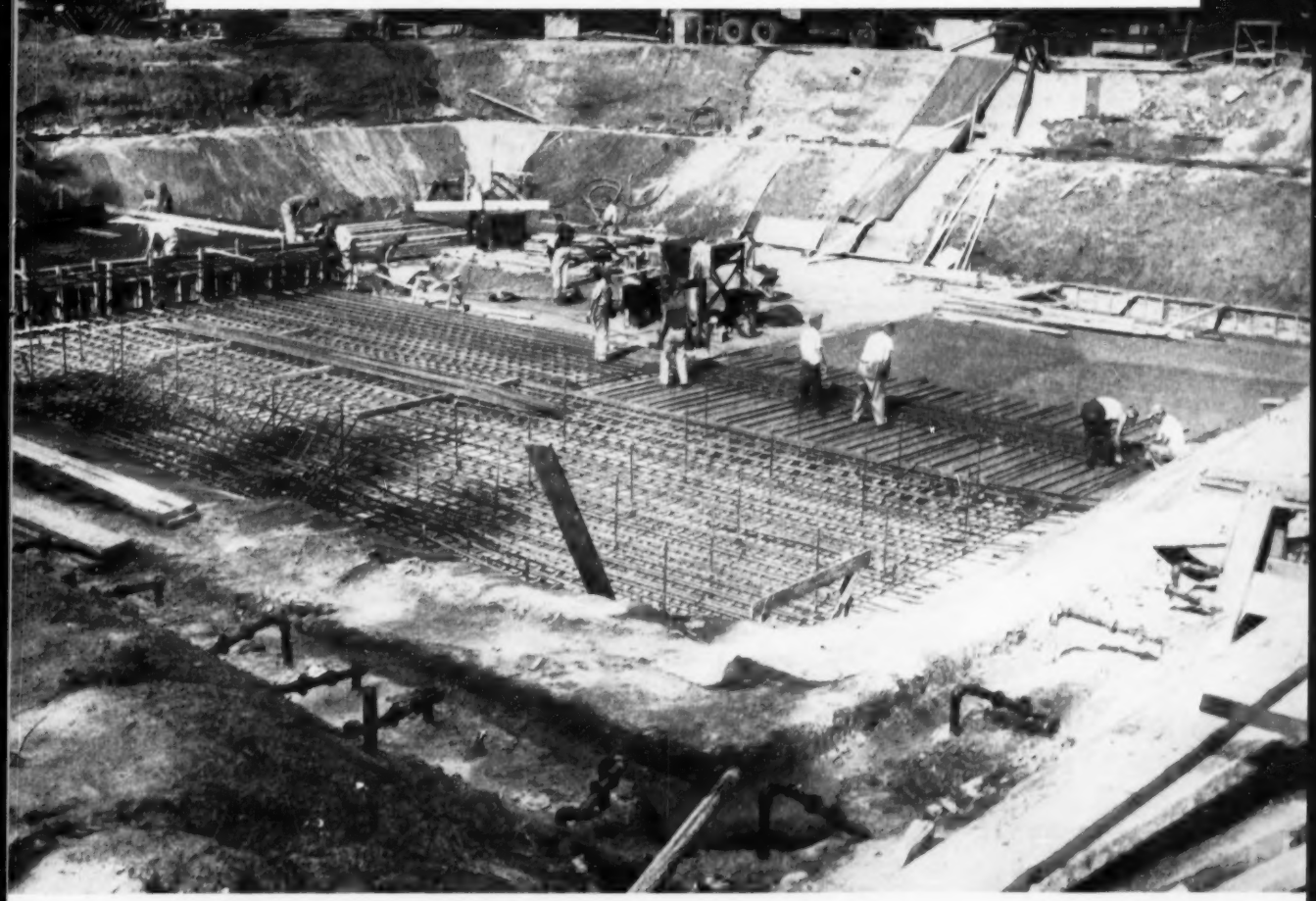
HOT FLAME—Traveling five times speed of sound, 4,000-deg flame spalls rock while gases and steam throw out particles.

Conventional rock drilling methods were tossed out at Upper Beauharnois Lock when an extremely hard and abrasive rock called Potsdam sandstone proved too tough for conventional drills.

After experimenting with wagon drills, rotaries, and churn drills, United Waterways Constructors, Ltd., decided they needed something drastically different to speed the job and cut drilling costs at the same time.

The answer was a rig called a jet piercer, developed by Linde Air Products—Division of Union Carbide. Working on the rocket jet principle, the piercer throws out intensely hot flame that impinges rock at five times the speed of sound. The 4,000-deg flame spalls the rock continuously,

IBM FOUNDATION STARTS EFFICIENTLY IN THE DRY . . . .



General Contractor: A. E. Stephens Co., Springfield, Mass.
Pumping Contractor: American Dewatering Corporation, New York
Consulting Engineers: Moran, Proctor, Mueser & Rutledge, New York

A MORETRENCH WELLPOINT SYSTEM controls 12′ of water in varved layers of silt and clay while the contractor constructs foundation for International Business Machine Corp's. new office building in Hartford, Connecticut.

Pumping started at 4:30 PM on June 19th. On June 22nd they were excavating in the dry.

The cost of efficient pumping is *lower* than you think. On your next wet job, find out in how many ways Moretrench Wellpoint Equipment can save you money. Our nearest office is at your service.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington
Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario
Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

while a combined force of burning gases and steam throws the broken particles out of the hole.

A liquid hydro-carbon fuel, such as kerosene or a low viscosity fuel oil, is combined with high-purity oxygen in the burner to produce the flame. Water is added for three purposes. It cools the combustion chamber and nozzle, quenches any material in the rock that may have become fused by the flame, and converts to steam to carry spalled particles out of the hole.

At Beauharnois, the jet flame device did a fast job of piercing the Potsdam sandstone. A fine-grained, grey-white quartz, the rock was so hard and abrasive that diamond bits on the Seaway Authority's boring rigs wore out in only 5 to 10 ft. Shovel teeth lasted only 8 hr, corner bits on dozers had a life of only one shift, and tractor pads wore out in only 600 to 800 hr.

Project manager E. A. Buie kept detailed cost records of wagon drills, rotaries, and well drills. And he found that well drills were the most economical, producing a net drilling cost of 35c per yd. However, they were too slow to keep his extremely tight job on schedule.

Fast Drilling

The jet-flame device proved to be the answer. Although its cost per yd was also 35c, it required only 4½ hr to drill 1,000 yd, instead of 50 hr with a well drill. Its hourly cost of $76 was eight times that of the well drill, but its speed made the difference.

Mounted on a modified well drilling rig, a suspended blowpipe carrier controls combustion and action of the 18x2-in. flame. Holes 6 in. in dia and at least 40 ft deep were sunk in a 20x20-ft pattern. Shooting about 10 holes at a time produced a dynamite factor of 1.2 lb per cu yd. And fragmentation was good.

The primary difficulty experienced with the jet flame was at mud seams and where the character of the rock changed. The jet is at its best in spallable material, especially rock containing silica. But when it hits unsuitable material, it forms a bulb or chamber instead of a hole. Fortunately, this happened too seldom to have any serious effect on drilling production.

Supplemented by five churn drills and a fleet of wagon drills for line drilling, the jet piercer worked 24 hr a day, five days a week to bring the job up to schedule. Rock was excavated mostly by a 4-yd Lima, 3-yd Link-Belt, and 2½-yd Lima shovel. A fleet of 11 International 25-ton Payhaulers and four Euclid 22-ton units hauled rock either to a fill, a crusher, or a breakwater.

A few thousand feet downstream at the lower lock, Canit Construction Co. was able to make a faster start on their rock excavation. They found they could drill all their holes economically with nine Bucyrus-Erie churn drills, sinking 9-in. holes in a 20x20-ft pattern to depths of 65 ft. Excavation is handled by 4-yd shovels and a fleet of Euclid trucks.

Scoopmobile's Breakout Bucket Action Delivers Bigger Loads

LD-8A Scoopmobile loading rock. Note excellent visibility and ease with which operator reaches his seat from either side

The heaping load on the business end of this Scoopmobile illustrates the unequalled value of 100% breakout bucket action.

Scoopmobile digs into the pile at ground level, and the load falls into the bucket on its way up. Breakout action assures full loads and helps to pull the machine into the pile with less tractive power, less torque on the axles and less spinning of wheels.

Ask for a Scoopmobile demonstration — without obligation — on your own work, and let the actual performance govern your choice of the most profitable loading equipment.

Other features that give you bigger production from your Scoopmobile loaders are:

- 2-axle oscillation
- 4-wheel power brakes
- 4-wheel power steering
- Center pin coupling
- Full reverse transmission
- Power-shift transmission
- Complete operator safety
- Lateral bucket spotting

SCOOPMOBILE *manufactured by* **MIXERMOBILE MANUFACTURERS INC.**

8027 N. E. Killingsworth Street, Portland 20, Oregon

Dealers in principal cities of the United States and Canada

IMPERVIOUS CLAY COMPACTED TO 97% DENSITY IN SINGLE COVERAGE

For construction of an earth and clay dam for flood control, and relocation of Highway 85-87 north of Colorado Springs, 2,000,000 yards of earth had to be compacted into dense fill. Minimum compaction time was allowed, because this main route to Denver had to be opened to traffic as quickly as possible.

To speed the compaction job, two Cedarapids Vibratory Compactors were used. The Cedarapids combination of static weight and dynamic vibratory thrust through pneumatic tires has proved to be the fastest method of compacting fill to specified densities.

The 200-ft.-high dam contains well over a million yards of material. The inside was faced with impervious clay which had to be compacted to 97% density clay core. Fills were built in 8" and 10" lifts, watered to 12% moisture, and compacted to specified density *in a single coverage.*

Compaction time saved by utilizing the exclusive Cedarapids principle of impact-compaction through pneumatic tires played an important part in opening Colorado's new 4-lane highway for traffic just 4½ months after the job was started, *and well ahead of schedule.*

These two jobs tell the money-saving story of

CEDARAPIDS VIBRATORY COMPACTORS

VIBRATORY COMPACTORS SPECIFIED BY CANADIAN GOVERNMENT FOR TRANS-CANADA HIGHWAY IN NATIONAL PARKS

In a land where severe winters and extremes of temperature increase road maintenance problems and costs, often to prohibitive degrees, engineers recognize the importance of road bases and subbases that are properly compacted to provide a permanent structural foundation resistant to the effects of alternate freezing and thawing. That's why Canadian Government specifications call for Vibratory Compactors on Trans-Canada Highway work in National Parks.

In Yoho National Park in the Canadian Rockies, Mannix Ltd. of Calgary used a Cedarapids Vibratory Compactor to assure not only lower future highway maintenance costs, but also to cut construction costs of the original base because fewer coverages and less time are required with the Cedarapids unit.

Square M Construction Ltd. of Edmonton used two of their four Cedarapids Vibratory Compactors to accomplish the same results on the Banff-Jasper section of the highway.

Cedarapids — Built by IOWA

The ONLY pneumatic-tired compactor which combines dynamic vibratory thrust with static weight to exceed specified densities in one or two coverages

Patent No. 601110

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa, U. S. A.

Construction Companies with this New

Examples of the hundreds of applications for Builders use of the APECO DIAL-A-MATIC Auto-Stat

"I'm leaving now . . . I'll take a copy of the drawing with me." Quicker than you can put on your hat and coat, the Dial-A-Matic copy is ready. There is no waiting or fuss.

"Let's see the last drawing on file." Eliminate loss of file copies. Fill requests for copies with low-cost, photo-exact copies made easily on the Dial-A-Matic.

"Send a copy of this bid to the Atlanta office." It's fast and simple to get extra copies for any of your field representatives and branch offices with this new copymaker.

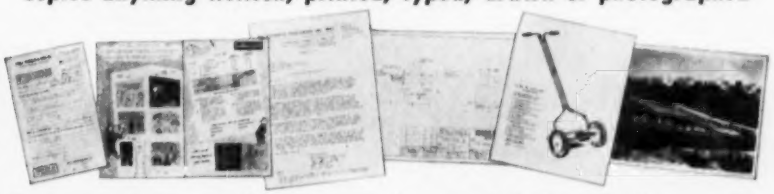
"The Estimating Department wants a copy of these specifications." All papers, including those with notations in ink or colored pencil, can be copied instantly on the Dial-A-Matic, and the original never has to leave the office.

"Send a copy of this deed to our attorney." With the Dial-A-Matic that's all there is to making a copy of an important document in seconds. If it's a confidential document, making a Dial-A-Matic copy is so simple that you can do it yourself.

"We'll need extra copies for the meeting." Now everyone at a meeting can have copies of important material. If necessary, additional copies can be made right in the meeting room without disturbing anyone.

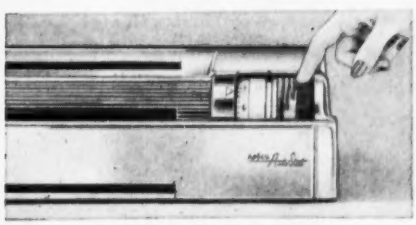
Copy All Papers Instantly... All-Purpose Copy Maker!

Copies anything written, printed, typed, drawn or photographed



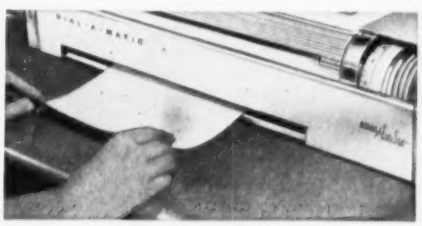
Instantly copies drawings, bids, estimates, price lists, blueprints, contracts, reports, progress charts, letters, etc.

Contractors throughout the United States have accepted Apeco Auto-Stat as standard equipment to handle their many applications for copying. It makes exact photo copies of anything in seconds. With the new all-electric Apeco Dial-A-Matic Auto-Stat you can get clear, bright, sharp black on white copies and it's so easy. The magic touch dial control assures a perfect copy every time. Styled in polished, gleaming, stainless steel—the Apeco Auto-Stat is handsome, light weight, and compact. It copies any original up to 15" wide—any length on opaque or transparent paper—printed on one or both sides. It offers hundreds of time and money saving uses for every construction company and is priced well within the smallest budget.



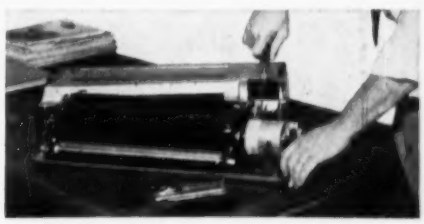
SO EASY TO OPERATE!

The dial is the secret of the world's easiest copying method. Just turn the dial to the type of original being copied and the Dial-A-Matic is adjusted to produce a perfect copy every time.



ANYONE CAN MAKE COPIES!

Dial-A-Matic operation is a triumph of simplicity. The original to be copied and Apeco paper are put into the copying unit. Just two simple steps and you zip the copies apart . . . that's all there is to it!



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Your Apeco representative is a factory-trained expert in the servicing of all Apeco equipment. He is available at all times to service the equipment in his territory at no cost.

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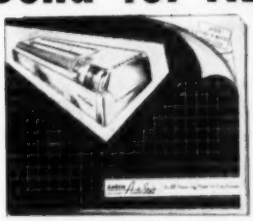

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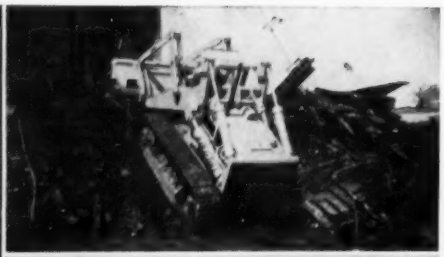


UPPER: This EIMCO 105 FRONT-END LOADER barely had its "wraps" off before being initiated into the MANAFORT BROTHERS' work force . . . clearing debris from a million dollar fire in the heart of the business district, Meriden, Conn. Says ANTHONY (TONY) MANAFORT, president: "We took a long look at the tractor-loader market and finally chose Eimco. After its performance at Meriden, we're glad we did; it fits our needs to a T."

LEFT: In New England — wherever antiquated structures are being razed to make room for modern offices, factories or dwellings . . or where there's a tough clean-up project going on . . . it's very possible you'll find MANAFORT BROTHERS on the job. And you'll likely find one (or any combination of) the MANAFORTS around to see that work is moving on schedule. Introducing them left to right: ANTHONY, brothers PAUL AND FRANK and son JIM.

"Our Eimco 105 made a 'hit' with us on the first job..."

This comment by **Anthony (Tony) Manafort** referred to the satisfaction of he, his brothers **Paul** and **Frank** and his son **Jim,** in their new **Eimco 105 Front-End Loader** after it had speedily cleared debris from a $1 million fire in Meriden, Conn.

Since it's their business to remove the "old" to make way for the "new" . . . it's normal for the **Manafort Brothers** of **New Britain, Conn.,** to do their own "wrecking." But tough, unscheduled clean-up jobs such as the Meriden fire have a way of sneaking in on a busy work calendar . . . an important reason why the **Manaforts** must continually plan for faster equipment to handle more and bigger jobs.

"We depend on our tractors to do a lot of different jobs," Tony explains, "pry-out concrete, knock down brickwork, dig and load fast, tow, push, grade . . or a dozen other things. They have to be rugged 'cause we can't afford to baby equipment to keep it working. The Eimco has given us top performance on every job."

It's easy to understand why the **Manaforts** enjoy satisfaction in the outstanding performance of their **Eimco 105.** With independent track reversal, it maneuvers fast and sharp; power shifts provide quickly responsive, precise control from full reverse to full forward speeds with a minimum of physical exertion; from his up-front position, the operator works faster with more accuracy at less strain; Eimcos stay at work without excessive, time-consuming delays for maintenance and repairs, and they offer outstanding front-end versatility for handling scores of different jobs, economically.

Let us tell you more about this busy money-maker!

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-289

SPREADING—First move in stabilizing sub-base is to spread and mix cement. Hercules spreader on rear of bulk truck spreads enough cement to give eventual 5% mix. Seaman-Andwall mixer follows, mixing cement and earth to required depth.

ADDING WATER—After cement and sub-soil have been dry-mixed in first pass, Trav-L-Plant makes second pass to add water. Tank truck preceding plant supplies water but plant does the actual pumping, metering, and mixing with its own equipment.

In-Place Mixing Saves Airfield

REBUILDING three taxiways at Douglas-Bisbee Airport in southern Arizona was an $80,000 job that required smooth organization and efficient use of equipment.

L & M construction Co. of Tucson did the job for $5,000 less than the owners, Cochise County, figured it would cost. Once their machines got rolling they cement-stabilized the sub-base at a rate of 10,000 sq yd per day.

The job is part of a gradual conversion of the Douglas Airport from a small fighter training base, built hastily at the beginning of World War II, into a commercial airport.

In 1948 Cochise County took over from the military after the four runways had been enlarged to handle twin engine planes. Now American Airlines, the major user of the field, wants to land DC-7 flights there.

The clay subsoil was adequate for the wartime fighters but multi-engine planes proved too much for it, and an eight-man maintenance crew was fighting a losing battle

REBUILDING AN AIRPORT . . .
continued

against cracking pavement.

The county's solution was to rip up the old pavement, stabilize two layers of sub-base with cement, and lay a new 2-in. asphalt pavement.

A Caterpillar No. 12 road grader and an Adams machine, both equipped with scarifier teeth, ripped up and windrowed the old 2-in. pavement. A Hough Payloader loaded it into three dump trucks that hauled it outside the construction limits and wasted it on an unused part of the airport property.

According to the specifications of the consulting engineers, Johannessen and Girand, the sub-base was to be formed in two layers.

On top, a 6-in. lift of the existing clay was to be stabilized with 5% portland cement by weight. Under this, the next 4 in. was to have 2% cement added, to give to total stabilized base of 10 in.

The two graders pushed the top 6 in. of sub-grade to the side of the taxiway so that the lower 4 in. could be treated. They then made a pass over the lower layer with their scarifiers to loosen it.

The next move was to add the dry cement, which was hauled in bulk trucks from Tucson, 120 mi away. The trucks dumped the cement into a Hercules spreader that laid it so as to give an eventual 2% mix.

Accuracy of the spreading was checked daily by laying a 1-sq yd piece of canvas on the ground in front of the spreader and then weighing the cement that the spreader left on the canvas. These tests showed that the machine was accurate.

Three passes with a Seaman-Andwall Trav-L-Plant mixed the cement with the clay. On the first pass the plant dry-mixed to the full depth of the layer being treated.

On the second pass a water truck preceded the plant. The plant had its own pump and metering equipment and was set to bring the material up to optimum moisture content. The optimum varied from 8 to 12% depending on the type of material in a given area.

The third pass was a final and thorough mixing of moisture, cement, and clay. Speed was important here because final mixing and consolidation had to be done before the cement could harden. The objective was to mix and compact within 1 hr, and preferably within ½ hr.

COMPACTING—Self-propelled, pneumatic-tired compactor consolidates sub-base to specified 95% in three passes. Motor grader insures smooth surface for final paving.

TESTING—Accuracy of spreading is tested by laying a 1-sq yd piece of canvas on ground before spreader passes. Hand scale then weighs actual quantity deposited.

Right after the mixing a Seaman-Andwall pneumatic-tired compactor made its pass. Specifications called for 95% compaction, and the machine usually achieved this figure with the second pass. However, to make sure, it always made a third pass.

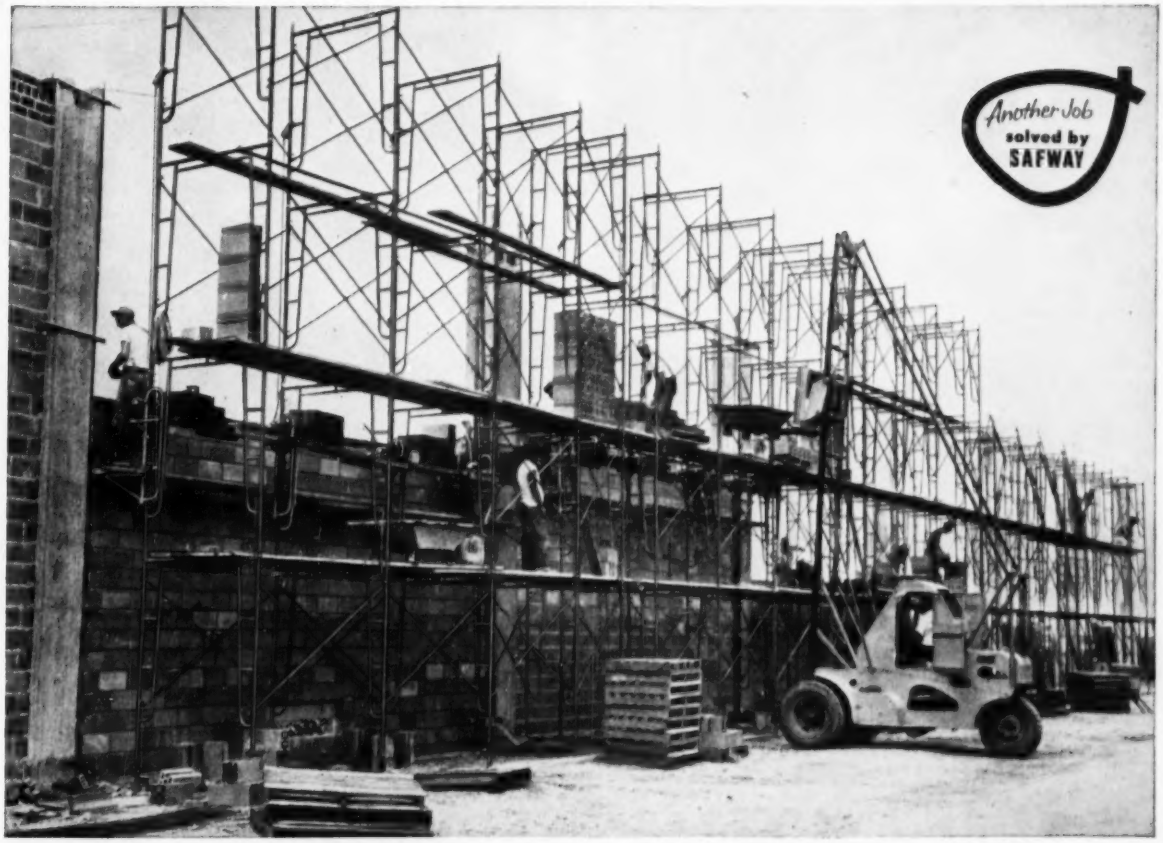
The entire process was repeated for the 6-in. top lift. On this lift accurate surface grading was especially important because the pavement would go directly on top.

To finish the job, the crews primed the base with .15 gal of asphalt emulsion per sq yd and laid down a 2-in. asphalt pavement. The Seaman-Andwall compactor rolled the pavement.

A breakdown of L & M's quotations on unit prices shows that paving accounted for about half the $80,000 contract. This figures out to about $1.33 per sq yd for the 30,000 sq yd paved.

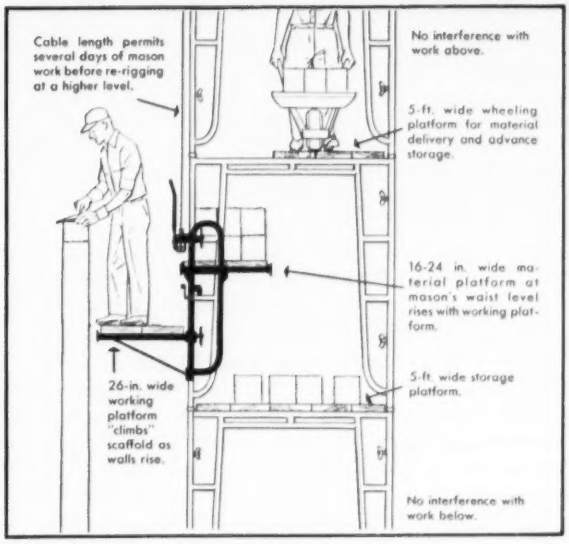
Preparation of the sub-base was 88c per sq yd for mixing, placing, and compacting the two lifts. In addition, 2,867 bbls of cement cost just over $13,000.

Handling the job for L & M was general superintendent Romeo Dauphinais. William Gulnerich was resident engineer.



Safway Mobil-Brackets Follow Courses of Block on 225-ft. Walls

How to Save 25% on Total Wall Costs


Cable length permits several days of mason work before re-rigging at a higher level.
No interference with work above.
5-ft. wide wheeling platform for material delivery and advance storage.
16-24 in. wide material platform at mason's waist level rises with working platform.
5-ft. wide storage platform.
26-in. wide working platform "climbs" scaffold as walls rise.
No interference with work below.

NEW MOBIL-BRACKET METHOD REDUCES MOST COSTLY FACTOR IN BUILDING MASONRY WALLS

MODERN METHODS really paid off on construction of the State Brand Creameries warehouse at Mason City, Iowa. Using "climbing" mason platforms and efficient material handling, the contractors completed 225-ft. walls with important savings in time and cost.

Palletized block is delivered direct to working levels by lift truck. And the masons work to best advantage from platforms mounted on self-raising Safway *Mobil-Brackets.* As courses of block are laid, working and material platforms are elevated to keep masons at their ideal working level. Laborers use a walk-through platform inside scaffold frames for material delivery and advance storage.

The Safway *Mobil-Bracket* method reduced actual block laying time—biggest factor of in-wall costs—and realized overall savings of 25%.

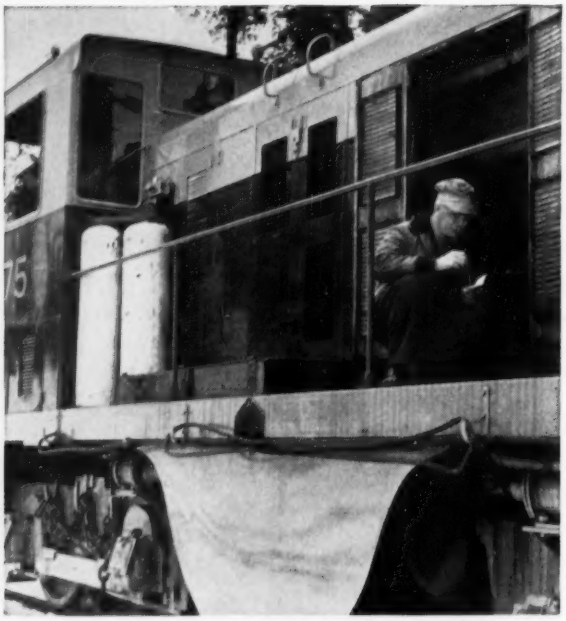
LEARN HOW SAFWAY CAN HELP YOU

Similar savings are available to you by using Safway *Mobil-Brackets.* Your Safway dealer can show you how—and offers complete stocks of *Mobil-Brackets* and Safway Scaffolding for *SALE* or *RENTAL.* Write today for **BULLETIN 510.**

SAFWAY
STEEL PRODUCTS, INC.
6243 W. State St., Milwaukee 13, Wis.

(Advertisement)

A single drop of used oil from this truck indicates true condition of the vehicle's oil . . . and tells a lot about the engine's operation.



Daily oil checks assure maximum lubrication efficiency in this diesel locomotive.

Now—they're testing used oil in minutes

THE NEED for a fast, accurate and practical method for determining the condition of used oil has long been one of the more serious problems confronting fleet operators. It's obviously wasteful to discard still-good oil, but operating a vehicle with contaminated oil could lead to costly engine damage. This was an unsolvable condition which maintenance men had come to accept.

Since no two vehicles, even of the same make and model, are identical in performance or operation, maintenance men were compelled to compromise on oil change "averages" recommended by engine manufacturers. This procedure is uncertain and costly. Fortunately, this operating conflict has been resolved with the introduction of a simple but completely reliable oil check system . . . the Shell ADC Oilprint Analysis.

The ADC Analysis was primarily conceived to determine proper oil change intervals for individual engines. However, it goes much further. It is capable of actually reducing engine maintenance costs by disclosing certain mechanical defects *before* they have caused serious engine damage.

The test procedure is very simple . . . requires little practice to perfect . . . and provides a reliable check of oil from merely two drops of used oil. In minutes, the degree of *A*lkalinity, *D*ispersancy and *C*ontamination can be determined easily.

Here are several typical examples from various areas of the country. They show how fleet operators, employing both diesel and gasoline engines, have successfully and profitably applied the ADC program.

A Kansas City Freight Line

Operating a large fleet of trucks, one Kansas City freight line previously had drained and replaced oil every 3,000 miles. After adopting the ADC Oilprint Analysis, individual test charts showed that, in most cases, drainage would not be necessary at less than 6,000-mile intervals. Even at this doubled interval, engine life was not affected. Further proof was established when these engines were inspected at 87,000 miles and no appreciable wear was found on bearings, pistons, rings or valves.

An Idaho Logging Operation

Oil had previously been drained after a limited number of hours of use on an Idaho company's diesel locomo-

Substantial oil economy is realized in this tractor, because oil is changed only when indicated by the Oilprint.

Taking a quick "fingerprint" of crankcase oil from an interstate carrier.

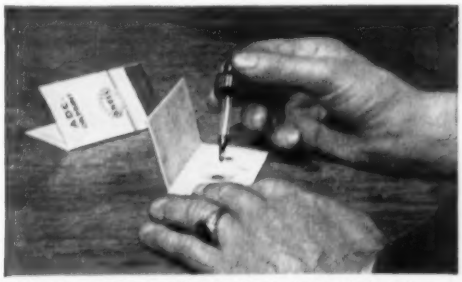
tives. With the ADC Oilprint Analysis as a guide, the oil-change interval has now been safely increased many-fold. The savings made possible by this on-the-spot test in oil, filter change and labor costs were considerable. Furthermore, leaky head gaskets are frequently discovered before any serious engine trouble develops. Here is another valuable plus for the ADC Oilprint Analysis.

A Washington, D.C., Transit Company

This transit company operates a large fleet of buses with both gasoline and diesel engines in use. With the difference in operating schedules . . . rush hours, short and long hauls, around-the-clock schedules . . . both engine types were believed to require complete oil changes every 2,000 miles. When the ADC program was instituted, the tests showed that oil-drain periods and minor maintenance checks could be safely extended to every 3,000 miles for gasoline engines and 4,000 miles for diesel engines.

Fleet operators, who are concerned with extending the service of crankcase oil and avoiding the risk of using contaminated oil, are invited to sit in while a Shell service engineer demonstrates the time-and-money advantages of an ADC Oilprint Analysis program.

Photo shows an oil-spot test card . . . one phase in the visual life record of a change of oil.



One drop of a special indicator* fluid developed by Shell checks the alkaline reserve in the oil.

*Indicator Fluid U.S. Patent No. 2,770,530

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

Architect:
ZIEGLER,
CHILDS & PAULSEN
Jersey City

Contractor:
WALTER KIDDE
CONSTRUCTORS, INC.
New York & Houston

17 stories of quality masonry construction— with LEHIGH MORTAR CEMENT

Over 5,000 barrels of Lehigh Mortar Cement were used in the masonry of this new 17-story $13,000,000 Martland Medical Center, overlooking Newark, New Jersey.

Walter Kidde Constructors, Inc. selected Lehigh Mortar Cement for its uniformity and ease of handling which permitted a smooth running masonry operation, kept labor costs down, and contributed to quality workmanship.

Try Lehigh Mortar Cement on your next job. See for yourself how it encourages good workmanship—helps produce clean, weathertight masonry walls.

LEHIGH PORTLAND CEMENT COMPANY
Allentown, Pa.

• LEHIGH MORTAR CEMENT • LEHIGH PORTLAND CEMENT • LEHIGH EARLY STRENGTH CEMENT • LEHIGH AIR-ENTRAINING CEMENT

Construction Men in the News . . .

JAMES CONFORTI, JR., chief engineer and treasurer of the William L. Crow Construction Co. of New York is the new president of the John H. Eisele Co., New York building firm. John H. Eisele, president and founder of the firm will become chairman of the board.

Conforti's appointment kicks off an expansion program that will extend Eisele's activities to include all of the United States east of the Mississippi River.

Conforti, an attorney and professional engineer, entered the construction business as an apprentice in various basic building trades including carpentry, masonry, and plastering.

Prior to World War II, he was vice president of the Union Construction Co., a New York building contractor. The company became inactive when he joined the Navy Seabees and priorities made building materials unavailable. He saw four years of overseas service as a lieutenant commander and after discharge joined the architectural firm of Voorhees, Walker, Smith and Smith. He joined the Crow company in 1949.

FRED L. GOLDSBY, vice president and formerly general sales manager of the Chicago Bridge and Iron Co., will become assistant to the company's president.

Goldsby, who joined the company in 1927, worked in the research department and later became manager of the company's foreign erection department.

CHARLES DUBOSE, designer of Monmouth Park Race Track, has been named president of the F. H. McGraw Co. of Canada, Ltd. He will direct that Canadian building firm's activities from headquarters in Montreal.

DuBose had been vice president of the company's Toronto office at the time of his election. He came to the McGraw organization last year from Frank Grad & Sons, a Newark, N.J., architectural firm. He succeeds Clifford S. Strike, of New York who becomes chairman of the board.

The Canadian firm is affiliated with F. H. McGraw & Co. of New York but is principally Canadian owned.

THOMAS G. SANDBERG will head the midwest operations of Lively-Blair & Associates, Inc., construction safety engineering consultants. Sandberg will serve the firm's contractor accounts in Michigan, northern Ohio, Illinois, and Indiana.

Sandberg previously had served as administrative assistant for the Associated General Contractors of Minnesota, Inc. Before that he was sales engineer for Smith, Inc., distributors of construction equipment.

BRIG. GEN. WALTER K. WILSON JR., Deputy Chief Engineers for Construction, has been promoted to the rank of Major General. He has been an officer in the Corps since 1929 when he graduated from the military academy at West Point.

F. O. WALKER is new manager of the Atlanta District, Intrustion-Prepakt, Inc., Cleveland contractors in heavy concrete structures and foundations.

Walker joined I-P in 1952 and advanced to operations superintendent a year later, working out of the Chicago and Kansas City regional offices. He previously had been associated with the U.S. Maritime Commission and Eastern Air Lines.

JAMES R. BRITT, formerly manager of the chemical plants division of Procon, Inc., is the new general manager of Procon, Ltd., of Great Britain with headquarters in London. **CHARLES B. ROBBINS** (page 174), general manager of the British firm since 1952, will return to the U.S. to become

HOW TO HANDLE WET JOBS

SINCLAIR PIPELINE
East Chicago, Ill.

Contractor: O. R. Burden Const. Co.

WELLPOINT PUMPS HANDLE 22 FT SUCTION LIFT

LOWERING 16 ft of water at this lift would ordinarily mean placing wellpoint system on a berm below ground. Actually, as photo shows, results were achieved in the simplest way, without additional excavation, the wellpoint line and pumps working from street level. Other noteworthy items revealed by the photo include: (a) pre-drainage with wellpoints on only one side of wide trench; (b) the open-cut method, eliminating costly sheeting.

• The foregoing are typical of the efficiencies of the Griffin Wellpoint systems (several used continuously) on this vast project which involved mile on mile of digging, with the majority of the pipelines laid far below ground water table in deep trenches containing water-bearing sands. Progress rate? Even in many of the swampland sections, it topped 500 ft per day. For "quick-dry" . . . specify . . . Griffin.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

MEN IN THE NEWS . . .
continued

assistant to Carl B. Whyte, Procon president.

Britt has been with Procon since 1955. He was general manager of another subsidiary of the construction firm prior to 1956.

Robbins joined Procon in 1951. He had been in charge of engineering and construction projects for Rust Engineering Co., Pittsburgh, Pa.

CHARLES H. TOPPING, senior architectural and civil consultant for E. I. du Pont de Nemours and Co., Wilmington, Del. will be new president of the Building Research Institute, technical society for the building industry.

Topping, who had been vice president and chairman of the membership committee, succeeds Edmund Claxton, director of research for the Armstrong Cork Co., Lancaster, Pa.

UNITED
GIVE
the UNITED way

WATCH
For
Announcement
of
New Money Maker
438E57d
NEXT MONTH
BUCYRUS ERIE

WRIGHT
Type "R" Pull-A-Ways
WEIGH LESS THAN 9 POUNDS
Write for Bulletin 163-B
5-foot double strand, 3000-lb. pull
14-foot single strand 1500-lb. pull
Sturdy • Light • Safe • Economical
Here are some of the fine features of WRIGHT Type "R" Pull-A-Ways:
Drop forged ductile aluminum alloy frame • Wire hoist cable of maximum strength and flexibility • 8" minimum handle movement—for close hook-ups • 2" drum hub for cable • No oiling needed • Drop forged steel hooks • Removable, reversible "Safety Handle" that bends before any part of hoist is overloaded • Automatic load lowering, with positive control for safety. ACCO
Write our York, Pa., Office for Bulletin DH-163B for full story
Wright Hoist Division
AMERICAN CHAIN & CABLE
Bridgeport, Conn. • York, Pa.

NEW, 2-YD LOADER steps up efficiency of this operation

TRACTOMOTIVE TL-20D TRACTO-LOADER® Takes Over The Ore Loading Job — Releases Clamshell For Other Duties. Speeds Other Loading and Stockpiling in Rock Quarry for Basic Refractories., Inc., Fostoria, Ohio.

TL-20D LOADS 13 TONS OF HEAVY PHILIPPINE ORE IN 3 PASSES (material used in manufacture of brick). A rail-type clamshell was tied down full-time to this part-time job. Now the clamshell is used on other work . . . and the versatile TL-20D easily handles the ore loading, among its other jobs.

ON STOCKPILING, the TL-20D carries over 7,000 lb of limestone every trip up a steep incline. Delivers full loads because the TIP-BACK bucket retains the loads. Stockpile is several hundred feet long, about 40-ft wide and nearly 40-ft high.

PLEASED WITH PERFORMANCE

Both the superintendent and operator are pleased with the stability and power of the TL-20D . . . the ease with which the hydraulic torque converter drive gets heaped loads . . . the speed and simplicity of one lever control of all speeds, forward and reverse — exclusive with Tractomotive. Operator shifts into and out of any gear, at will, "on the fly."

TRACTO — a sure sign of modern design

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TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

TRACTOMOTIVE CORPORATION, Dept. CM
Deerfield, Illinois

☐ Please send TL-20D Literature
☐ Have salesman call

Name .....
Title .....
Company .....
Address .....
City ..... State .....

1 1,790,000 lb. charge of Amocol ammonium nitrate blasting agent primed with 60% Extra dynamite erupts with controlled violence to break and displace over 2,500,000 cubic yards of quartzite, the largest industrial blast in the nation's history.

Making mincemeat out of a mountainside . . .

THIS BLAST BROKE ALL RECORDS!

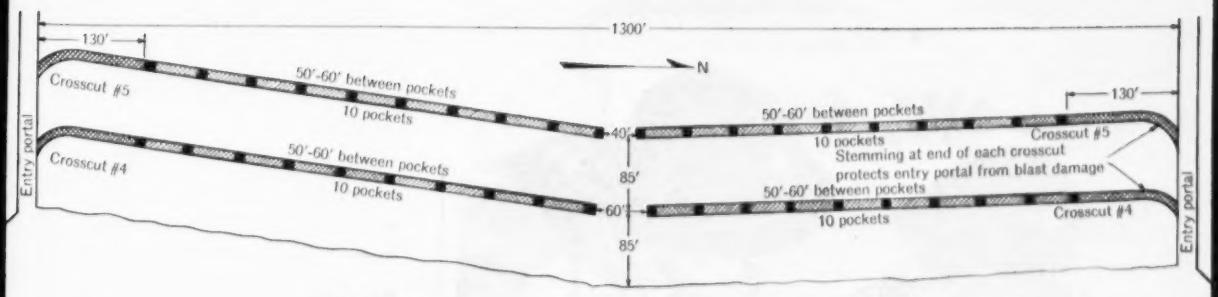
Two-and-a-half million cubic yards of rock broken by one construction blast! That's the record-smashing result achieved this summer at Little Valley, Utah, in the world's largest non-atomic blast.

Morrison-Knudsen Company, Inc., scored this industrial record with 1,790,000 lbs. of Atlas Amocol blasting agent and Atlas 60% Extra dynamite, detonated in two 1,300-foot coyote crosscuts driven from permanent entry portals (see sketch).

M-K engineers directing this project estimated that the blast produced over a tenth of the rock needed for the 13-mile causeway being built for the Southern Pacific railroad across the Great Salt Lake at Promontory Point.

Atlas is proud of the part its products and technical assistance played in making this historic blast a success.

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities



Plan of portals and crosscuts 5' x 7'

Height of burden from floor of crosscuts 200'

■ Explosives pocket

▩ Sand stemming

Amount of explosives used:	
Atlas Amocol	1,432,000 lb.
Atlas 60% Extra dynamite	358,000 lb.
Total	1,790,000 lb.
Amount of rock produced	2,500,000 cu. yd.

2 The two 1,300-foot coyote crosscuts were fired 25 milliseconds apart with Rockmaster electric blasting caps attached to the detonating fuse connecting individual charges within each tunnel. The crosscut nearest the face was fired first to provide relief for the second.

3 Muckpile shows uniform breakage and excellent displacement. Nearby buildings and equipment are untouched by throw. Only blast damage was to adjacent power and telephone lines which were purposely allowed to remain in shot area to minimize replacement costs. The rock will provide solid fill for causeway and also will be used as riprap in final stage of construction.

BE HARDHEADED ABOUT "HARD HATS"

try before you buy to make sure your men get the very best in head protection

Deciding which type safety hat your men should wear is a most important move. *Both* the safety and comfort of your workers depend on it. So don't just take ours or anyone else's word for what is best for your people . . . *try before you buy.* Ask your nearby Willson Safety Hat Distributor to demonstrate the Willson Super-Tough *phenolic* safety hat *right on your jobs.* See for yourself why this phenolic hat is the strongest type made . . . see how completely it meets all your needs. Scientifically designed to meet all impact specifications with ease, the Willson Super-Tough *phenolic* safety hat withstands 80 foot-pound drop ball tests—40 foot-pounds more than Federal Specifications. And it's most comfortable to wear, too. But *you* be the judge . . . call your Willson distributor, or write us for name, so you can have a thorough on-the-job demonstration.

SIX STYLE CHOICES—The Willson Super-Tough *phenolic* line includes six styles: Three hats and three caps with choice of "Geodetic," Standard, or Lace-in suspension.

SIX COLOR CHOICES—The natural finish of Willson Super-Tough *phenolic* hats and caps is an attractive blend of neutral browns and tans. Also available in spray-coated red, white, yellow, green, or gray for specific job identification. (Other colors on special order.)

WILLSON® PRODUCTS DIVISION
RAY-O-VAC COMPANY
141 Thorn Street, Reading, Pennsylvania

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

Distributor Appointments

Yale & Towne Mfg. Co.: The Contractors Machinery Division has three new distributors. They are: Freile Associates, Washington, D. C.; Stewart Equipment Co., Harrisburg, Philadelphia, and Wilkes Barre, Pa.; and R. W. Bleiler Equipment Co., West Hartford, Conn. The Materials Handling Division has appointed The William H. Ziegler Co. of Minneapolis as its Minnesota distributor.

Chrysler Corp.: The Marine and Industrial Engine Division has appointed six new distributors. They are: Western Industrial Engines Inc. of Denver, Colo.; Dependable Motor Parts Corp. of Buffalo, N. Y.; Dixie Irrigation Co. of Memphis, Tenn.; B. & C. Motors of Muleshoe, Tex.; Midwest Parts & Supply Corp. of Gary, Ind.; 54 Motors, Inc., of Guymon, Okla.

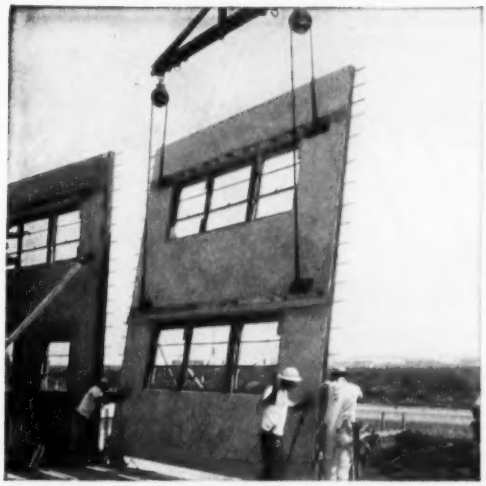
McKiernan-Terry Corp.: The Pile Hammer Division has appointed Southern States Equipment Co. of New Orleans, La., as distributor for the state of Louisiana.

Warner & Swasey Co.: Gradall Division has appointed two new distributors. They are: D. D. Kennedy, Inc., of Bellwood, Ill.; and H. B. Owsley & Son, Inc., of Charlotte, N. C.

Prime-Mover Co.: Two new distributors are announced: Ransome Corp. of Bear, Del., and Philadelphia, Pa.; and Ensminger and Co. of Wilkes-Barre, Pa.

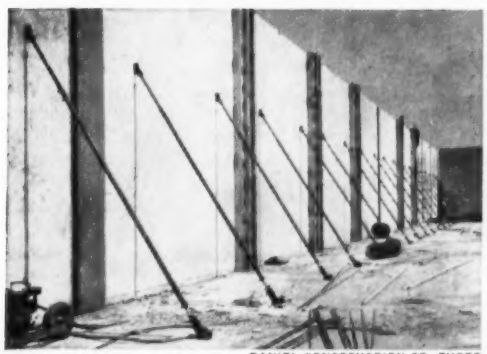
Electric Steel Foundry Co.: Faris-Moritz Co. of Denver, Colo., has been appointed an ESCO construction equipment dealer for Colorado and southern Wyoming.

Getman Bros.: Lincoln Contractors Supply, Inc., of Milwaukee,



PANEL with large window areas

57 TON SLAB being positioned



DANIEL CONSTRUCTION CO. PHOTO

ADJUSTABLE BRACES used for quick and easy alignment of panels

WAREHOUSE DANIEL CONSTRUCTION CO. PHOTO

Tilt-Up Costs Go Down

...with SUPERIOR "Pick-Up" Inserts, Brace Anchors, and Braces

When an outstanding Tilt-Up job rates an article in a construction publication you can be almost certain that SUPERIOR products were used. The reason is simple. SUPERIOR, as the pioneer in this field, developed designs that were thoroughly tested both in the laboratory and the field to assure safety with economical prices and low application costs.

These "Pick-Up" Inserts, Brace Anchors, and Adjustable Braces have been used and proven on literally thousands of projects, not a few of which were unique in design. With a background of such experience, the recommendation of our engineers as to location and types of Inserts and Anchors is reliable and valuable.

Avoid expensive crane delays, be assured of safety, and reduce your overall costs with these SUPERIOR products.

For further details request a copy of Bulletin TU-3

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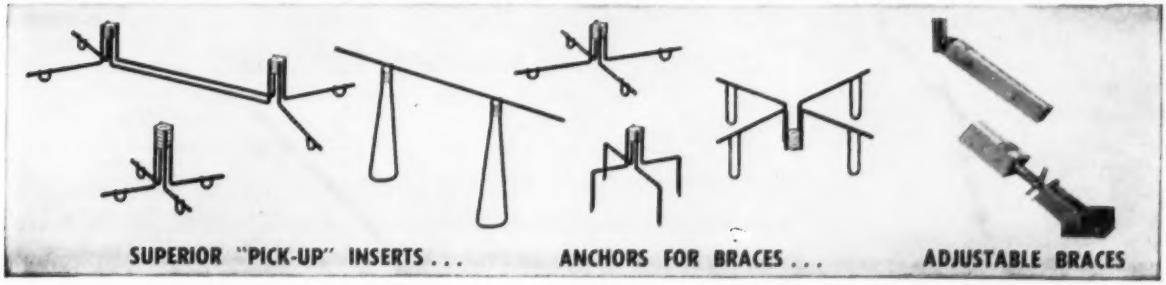
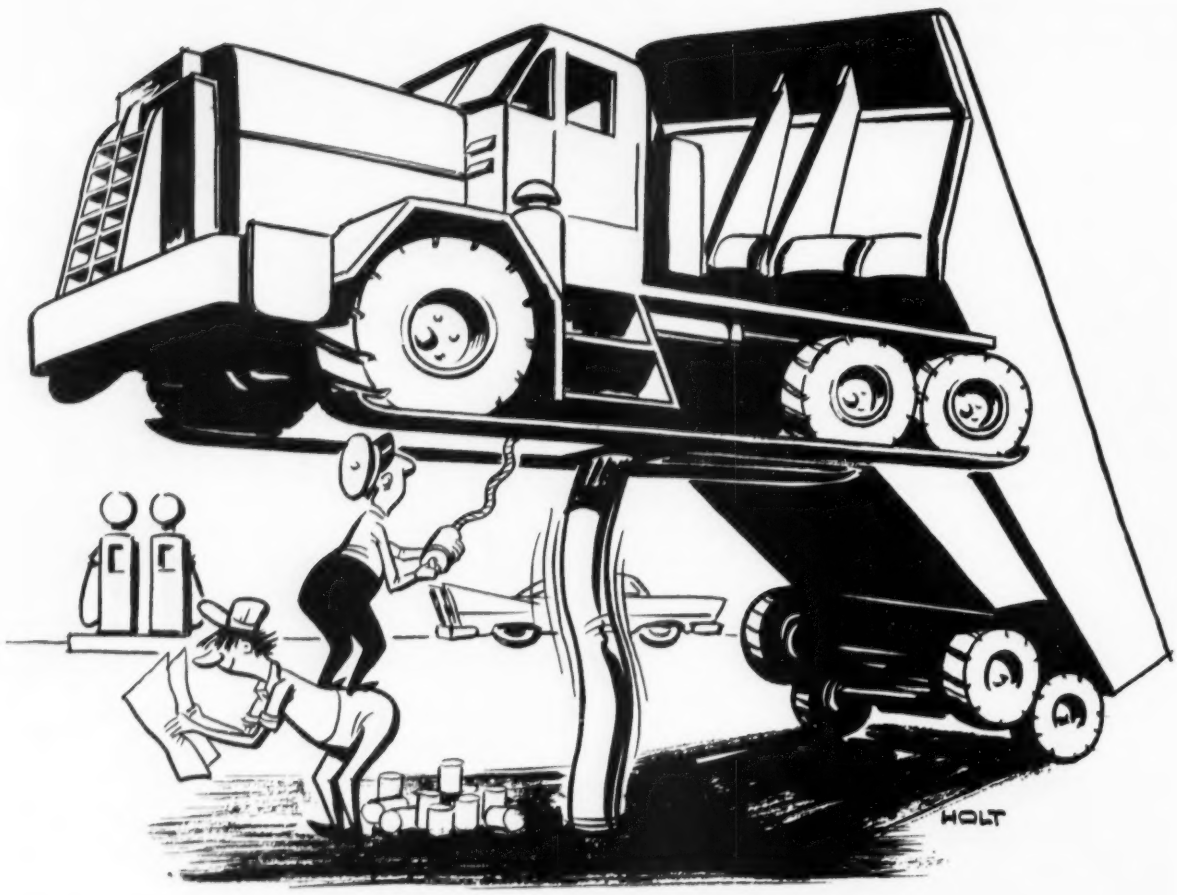


SUPERIOR "PICK-UP" INSERTS . . . **ANCHORS FOR BRACES . . .** **ADJUSTABLE BRACES**



Why use automobile grease in heavy-duty equipment?

Let's not kid ourselves about the difference between the lubrication requirements of automobiles and heavy-duty machinery. D-A Lubricants are compounded specifically for heavy-duty equipment. There is a right one for every application.

For example, D-A Track Roller Lubricant • D-A Winter Track Roller Lubricant • D-A Open Gear • D-A Torque Fluid • D-A Lithium, Extra-Heavy • D-A Transmission Lubricants • D-A Gun Greases.

Let your D-A Representative give you all the facts on how D-A Lubricants can reduce parts wear and minimize downtime . . . *increase the return on your equipment investment.*

D-A Lubricants make equipment last longer

D-A LUBRICANT COMPANY, INC. • Indianapolis 23, Indiana

Wis., is now handling Getman's "Scoot-Crete" truck sales for the Milwaukee area and 12 southeastern Wisconsin counties. In Los Angeles, Calif., Industrial Engine Service is a new distributor.

On the Sales Front

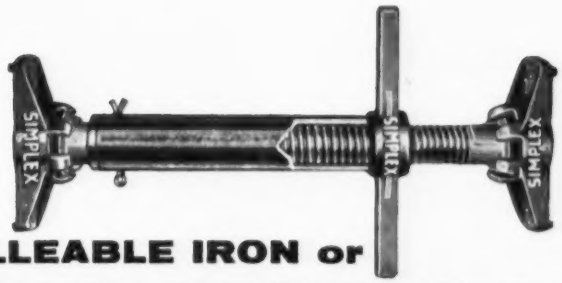
Bendix Aviation Corp.: The Radio Division announces several changes in its mobile products sales staff. G. D. Doroff is now national sales manager of mobile products, and M. E. Whitney becomes manager of marketing. Doroff will be replaced as midwest regional manager by F. R. Viafora. R. L. Abel has joined the company in the newly created post of regional sales manager, Mid-Atlantic states.

LeTourneau-Westinghouse Co.: D. H. Mitchell is the new eastern sales manager. He replaces J. A Vincent, who recently resigned to join Adams Construction Equipment Co., a new LeT-WesCo distributor in Florida. O. C. Zachary has been promoted to district sales representative in Virginia and the Carolinas.

Bucyrus-Erie Co.: Byron A. Haney has been named Northwestern sales manager. He has held several production and sales posts since joining the company in 1929. R. P. Brooks is now assistant sales manager, large machines and blast hole drills. W. R. Stone joins the Chicago office as small excavator sales representative.

Link-Belt Speeder Corp.: Two sales appointments are announced. Dave Van de Roovaart becomes assistant sales manager. Duane DeLong is district representative for the Mid-Southern territory.

Koehring Co.: In the Koehring division A. V. Cossens has been promoted from field service manager to assistant sales manager. G. E. Schmidt will replace him as field service manager. Three new district sales representatives have also been appointed. They are: E. Aho, whose district is the states of Michigan, Ohio, Pennsylvania, Wisconsin, and Northwestern



MALLEABLE IRON or

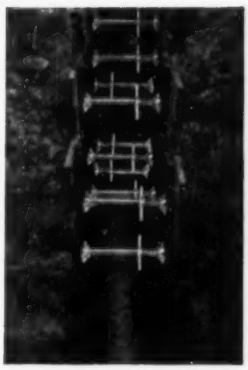
DROP FORGED?

Rugged dependability suggests that you insist on the best — Simplex *drop forged steel* trench braces.

Ball and socket joints at each end for tight grip at any angle. Blunt lever nuts or 3-way nuts — nail holes in both screw and butt ends. Furnished with or without pipe.

Simplex drop forged steel trench and timber braces *cost no more* and better eliminate the danger of cave-ins and costly re-digging.

SEND FOR UTILITY BULLETIN.



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RE-MO-TROL UTIL-A-TOOL **JACKS** JENNY ROL-TOE

TEMPLETON, KENLY & COMPANY
2509 GARDNER ROAD
BROADVIEW, ILLINOIS

Do Your Own Welding with this NEW

HOBART

"Self-Propelled"

arc welder

Save Hundreds on...

- CONSTRUCTION
- MAINTENANCE
- EMERGENCY REPAIRS

Reduce costly down-time and expensive replacement parts due to breakdowns in the field. Do your own construction work without depending on extra help. This Hobart Weldmobile welds anywhere, completely independent of power lines. No need for special truck and driver. Your operator simply drives the Weldmobile direct to the trouble spot. One engine serves all his needs — transportation, welding, and even operation of supplementary tools and lights. One man does the work. These advantages add up to real savings — savings that warrant your immediate attention. Mail the coupon today for a quick reply giving all the details.

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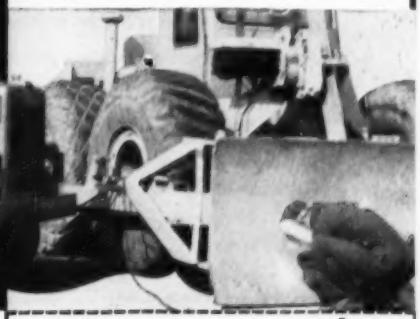

Contractor's Special

AC Welder/ AC Power Water Cooled

Husky Boy 200 amp.

Standard Gas Engine Drive

Big Brother 250 amp.

AC Welder/ AC Power Air Cooled

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Without obligation, send me more information on the following:

- ☐ Weldmobile
- ☐ Contractor's Special
- ☐ AC Welder/AC Power Water Cooled
- ☐ "Husky Boy"
- ☐ Information on "Iron Powder" Electrodes
- ☐ Standard Gas Engine Drive
- ☐ Big Brother
- ☐ AC Welder/AC Power Air Cooled

Name_____ Position_____

Firm_____

Address_____

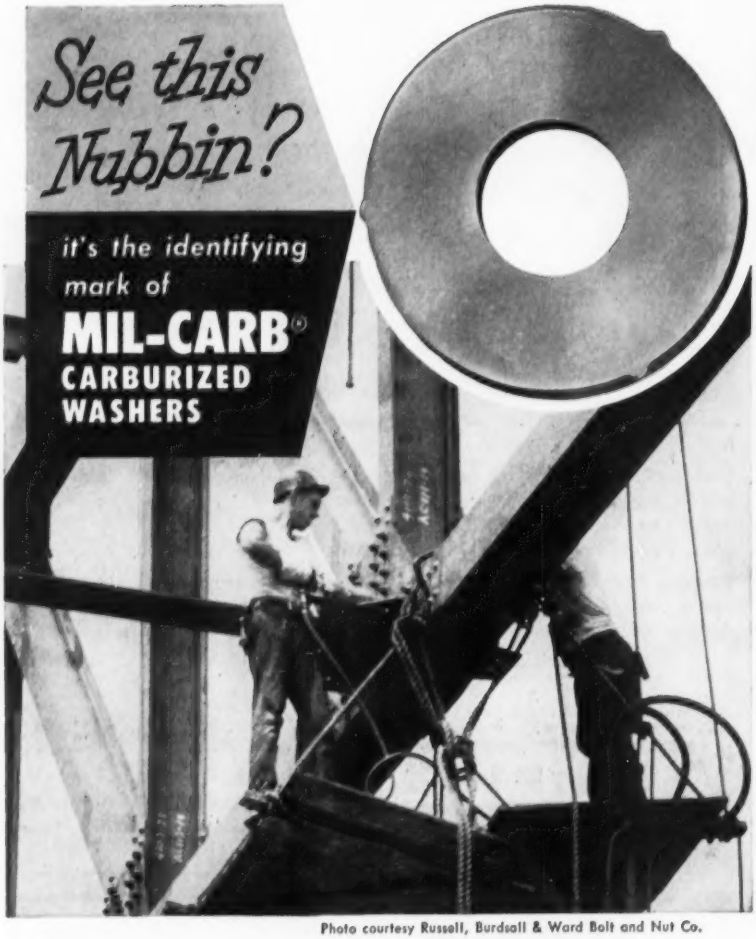


Photo courtesy Russell, Burdsall & Ward Bolt and Nut Co.

From an appearance standpoint, all washers, regardless of brands, practically look alike. But, *there's a big difference in quality!* That's why, for easy identification and to insure your getting the very best, Mil-Carb Carburized Washers are identified by 3 "nubbins" on the outside rim.

Mil-Carb washers are outstanding on at least three counts:

1. **Only Prime Quality Special Soundness Steel is used for strength equalling or exceeding the rigid specifications of ASTM designation A-325 *at all times!***
2. **A special treating process provides an exceptionally hard "outer skin" to resist grinding by the nut under the impact wrench *when others fail!***
3. **MIL-CARB washers are always uniformly flat and smooth with dimensions conforming to the American Standards Association.**

For your own protection and as a guarantee of the unyielding permanence of your steel structure . . . "look for the nubbin". . . specify MIL-CARB Carburized Washers. Available in six sizes, from ⅝" to 1⅛", packed in 200 lb. kegs.

Distributed by Leading Bolt and Nut Manufacturers and

U. S. STEEL SUPPLY DIVISION
UNITED STATES STEEL CORPORATION
208 South La Salle St. • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.
The World's Largest Producer of Washers
S. BAY ST., MILWAUKEE 7, WIS.

2247

SALES AND SERVICE . . .
continued

New York; H. C. Perry, covering Washington, Oregon, Idaho, Montana, and parts of Wyoming; and A. J. LaPorte, covering Louisiana, Texas, Oklahoma and New Mexico.

Worthington Corp.: Three promotions in the Marketing Division have been announced. William C. Cheek becomes Midwest region sales manager. J. H. Loomis replaces him as Chicago district manager. Hollis H. Wise becomes St. Louis manager.

In The Main Office

Universal Marion Corp.: Adrien F. Busick has been promoted from vice president, engineering, to executive vice president and general manager of the Marion Power Shovel Co. Busick will take full charge of plant operations for the company. He joined the company in 1929 and has held a number of engineering and corporate staff positions.

Timken Roller Bearing Co.: Dwight A. Bessmer has been named executive vice president of the company. Bessmer, a graduate of the Michigan College of Mining and Technology, also attended McKinley Law School and the Harvard Business School. He joined the company in 1933 and has held several sales and purchasing positions prior to his latest promotion.

Associations

Asphalt Institute: Walter R. Howat replaces John F. Pearring as district engineer at Denver, Colo. Howat is a 1940 Kansas State engineering graduate and has had considerable experience in public works construction and asphalt production and testing. He will furnish engineering services in a five state area.

Special Mention

Richmond Screw Anchor Co.: The Shattuck Denn Mining Corp. has acquired control of Richmond Screw Anchor Co. Richmond, oldest and largest manufacturer of concrete form tying equipment, has plants in Brooklyn, N. Y., and St. Joseph, Mo., and serves over 400 dealers throughout the world. No change in the personnel of the company is planned.

"HIGH STRENGTH STEELS

make possible modern dirt-moving methods,"

says W. O. Loy, General Superintendent
Fredericksen & Kasler Construction Company
Woodland Hills, California

The Fredericksen & Kasler Construction Company on the job constructing six- and eight-lane freeways for the State of California.

"WITHOUT MACHINES made from High Strength Steels, the current practice of employing scraper-type units to load dirt from cuts, or borrow pit while in motion, as well as to speed loads to placement areas, would not be feasible. Instead of the high production enjoyed, the contractor would be forced to return to the older and slower method of loading small trucks with a power shovel.

"High Strength Steel equipment eliminates much blasting," explains Mr. Loy. "Fifteen years ago, when a contractor prepared a bid for a job, he would figure a certain amount for blasting. Now, through the use of machinery built with High Strength Steels, it is possible to do loosening work with as much as 25% to 60% less blasting, which now costs the contractor from $175 to $300 per hour.

"The ability of High Strength Steels to stand up under hard usage is a primary factor in keeping equipment down time to a minimum. Only by using equipment built with materials that will withstand more abuse can a contractor expect to complete his job on schedule, and with a profit. These steels have the necessary impact resistance to stand up under the shock of loading 30 to 40 times per day and jolting over haul road. High Strength Steels provide the plus factor to permit pushing to meet completion deadlines," concludes Mr. Loy.

There are three brands of USS High Strength Steels — COR-TEN, MAN-TEN and TRI-TEN — which have found wide application in all types of earth-moving equipment. Each of these steels is recommended for certain end uses where its specific properties will assure longer service and greater over-all economy. All three steels have a yield point one-and-one-half times that of structural carbon steel and all enable greater strength and toughness to be built into vital parts of machinery. Check on it — nearly every earth-mover on the market depends on High Strength Steels for ruggedness and maximum economy.

Also ideally suited for road-building equipment — USS "T-1" Constructional Alloy Steel, having a minimum yield strength of 90,000 psi.

United States Steel Corporation, Pittsburgh • American Steel & Wire Division, Cleveland • Columbia-Geneva Steel Division, San Francisco
National Tube Division, Pittsburgh • Tennessee Coal & Iron Division, Fairfield, Ala. • United States Steel Supply Division, Warehouse Distributors
United States Steel Export Company, New York

USS HIGH STRENGTH STEELS

USS COR-TEN, MAN-TEN, TRI-TEN

"USS," MAN-TEN, COR-TEN, TRI-TEN and "T-1" are registered trademarks of United States Steel

UNITED STATES STEEL

Construction Equipment News...

DeLuxe Features For New Air Trac

A deluxe model of Gardner- Denver's popular Air Trac drill provides complete power positioning for vertical, horizontal, and flat lifter drilling. A new hydraulic drill positioner gives 120-deg mast swing that can be indexed another 90 deg, and 90-deg dump that can be indexed a full 360 deg. All controls for mast positioning, crawler drive, and drilling operations have been centralized on a remote control panel. Jaw clutches allow free wheeling for towing from job to job.—**Gardner-Denver Co., Quincy, Ill.**

Rear Wheels Oscillate Vertically

Southwest's self-propelled Vertical-Pak pneumatic rollers provide vertical oscillation through the action of their rear wheels. Available in a nine-ton, nine-wheel model, or 11-ton, 11-wheel model, the rollers maintain a uniform wheel load on uneven surfaces and over soft spots. Tires last longer because overloading any one tire is impossible. Ballast capacity for both rollers is 120 cu ft. They are 13 ft 1 in. long, 84 in. wide. Gas or diesel engine is optional.—**Southwest Welding & Mfg. Co., Alhambra, Calif.**

Crane Fits Behind Truck Cab

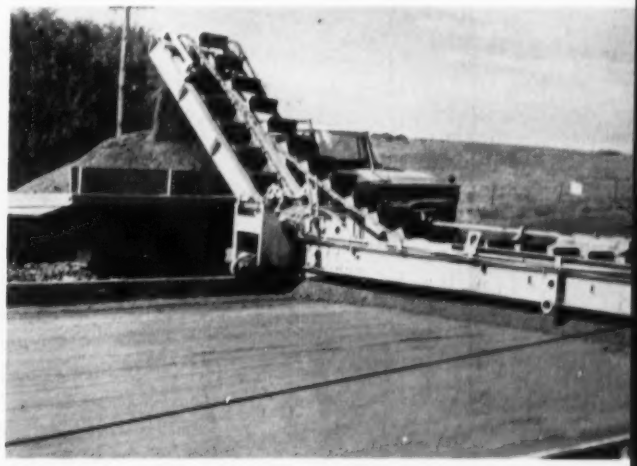
The Hiab 170 crane needs only 15 in. of space behind the cab, leaving the truck bed available for payloads. It offers lifting capacities ranging from 6,000 lb with a 5-ft boom to 2,500 lb with a 13-ft boom. Boom length is hydraulically adjustable. The crane raises 20 ft above ground level and it can swing through 360 deg. Control is from either side of the truck cab. When not in use, it folds snugly behind the cab. Outriggers are standard. — **Stanco Mfg. & Sales, Inc., 1931 Pontius Ave., Los Angeles 25, Calif.**

Narrow Blade For D9 Handles Pushing, Dozing Jobs

A new inside-mounted bulldozer for the D9 crawler is really a compromise between a conventional dozer and a push plate. The blade is reinforced and narrow enough to serve as a push plate, yet wide enough to permit a considerable amount of dozing. The straight blade has a cutting width of 10 ft 2 in., which just clears the width of the D9. The blade is ¾-in. thick and a ¾-in. reinforcement in back of the blade serves as the push plate. The 1½x12-in. cutting edge and the Cat 9S end bits make it a good rock dozer because the narrow width allows more unit force to be transmitted to the cutting edge. Dozer trunnions are welded under the D9 engine frame and Cat housings and pins are used on the push beams to attach the dozer to the tractor.—**Balderson, Inc., Wamego, Kansas.**

Small Space Heater Does Big Job

The Porto-Heat is a compact space heater that delivers up to 120,000 btu per hr while burning only .85 gph of low cost fuel. It weighs 80 lb and is 40 in. long and 16 in. high. Features include an automatic electric ignition, motor driven fan, and a newly designed combustion chamber. Optional equipment includes a 10-ft long canvas hot air duct, above.—**Stow Mfg. Co., 218 Shear St., Binghamton, N.Y.**



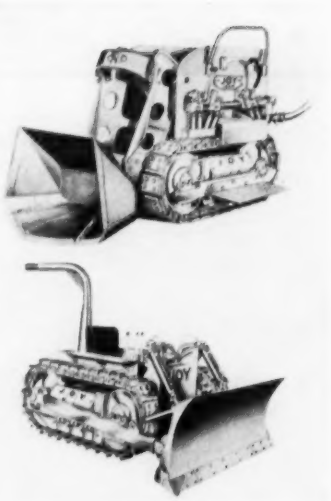
Loads Excess Directly Into Truck

The extra long horn extension shown above with a Blaw-Knox subgrader permits the contractor to load excess base material directly into a truck rather than piling it on the shoulder. This eliminates expensive rehandling costs and keeps adjacent lanes on road widening jobs open to the public.—**Blaw-Knox Co., 300 Sixth Ave., Pittsburgh 22, Pa.**

continued on next page

Pick-Up Carries Men and Cargo

The Travelette, a pick-up truck with a six-passenger cab, has been introduced by International Harvester as a combination passenger-cargo carrier. The cab of the double-duty vehicle has a full-width rear seat and its own curb-side door. The pick-up body is 6 ft long and 34½ in. wide. The Travelette is available on a 129-in. wheelbase chassis in both two-wheel-drive and four-wheel-drive International models. Less than 120 in. long overall, the truck is easy to park and maneuver. Standard engine for the Travelette is the 141-hp International Black Diamond model 240, but the 154-hp BD-264 engine is available.—**Motor Truck Div., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

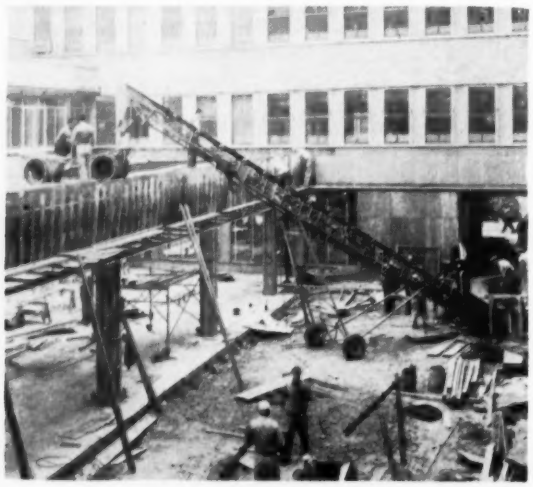


For Tunnel Work

Joy's new crawler equipment for tunnel work consists of an air or electric-driven tractor that can be equipped with a new overhead loader or dozer. With separate motors providing independent power to each track, the crawler can turn within its own radius. Bucket sizes range from 5 to 11½ ft.—**Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa.**

Cab for Small Wheel Tractors

A new all-weather cab for International, Ford, Case, Minneapolis-Moline, John Deere, and Oliver industrial tractors can be installed without interfering with front or rear-mounted equipment. The cab permits visibility in all directions, including upward, through a large safety glass windshield and skylight. Side panels made of canvas have vinyl plastic windows that can be rolled up or removed completely when the weather is good. The rugged frame is constructed of 12 and 14-gage steel. The cab comes in kit form for field installation.—**J. Frank Sims Cab Co., Box 98, Holden, Mass.**



Swivel Wheels Position Conveyor

The latest Faircrete conveyor, designed to carry concrete directly from transit mix trucks to forms, features swivel wheels that allow it to be moved along a long wall form without changing the conveyor's position in relation to the form. The conveyor also can be equipped with a larger receiving hopper so that its capacity is increased to 20 to 40 yd of concrete in place per hr, depending upon the slump of the concrete. The 40 ft long conveyor has a delivery height of 22 ft when fully extended.—**The Fairfield Engineering Co., Marion, O.**

continued on page 190

South Bend, Indiana, got its money's worth in this new $5,587,000 sewage disposal plant, built with the protection of an INA performance bond. Sollitt Construction Co., Inc., was the contractor.

CONTRACT WON...

INA's extra value helped to lower bid

When the bids are in and the qualifications compared, the winning contractor is often the one who has successfully economized in small ways. It is 'extra value' for the contractor if he can economize without sacrificing quality of service.

The contractor realized INA's extra value in a performance bond of Indemnity Insurance Company covering the disposal plant above. It was arranged through the local independent agent. Indemnity, with its broad bonding experience, formulated a plan to assure minimum rate. This resulted in a saving to the contractor equal to more than one-third of the difference between the successful contract bid and the next lowest.

This is but one example of extra value in coverage and, for contractors who qualify, minimum rates* and prompt handling of every need.

*Not available in Louisiana and Texas

INSURANCE BY NORTH AMERICA

INA 1792

INDEMNITY INSURANCE COMPANY OF NORTH AMERICA

MANEUVERING THROUGH TREES and over soft fill, is the American Backhoe that paced Moore's hard-working crews to a 1956 pipe laying record. In tough spots like this, American's extra wide crawler pads, generous power, sure-footed stability and fast, responsive controls keep jobs on schedule week after week!

AMERICAN ¾-YARD BACKHOE DIGS 80,000 FEET OF TRENCH IN 1956!

Robert W. Moore, St. Paul water and sewer contractor, started 1956 with a brand new American 300 Series Backhoe. When the year was over his records showed that his crew, working with this single machine, *had dug and laid* over 80,000 feet of sewer and water lines through all types of soil at depths from 8 to 22 feet! In mid-1957, Moore bought his second American, a 300 Series Dragline.

Fifteen miles west of the Twin Cities, Moore's record setting American Backhoe, with ¾-yard bucket, is chewing a 5,400-foot trench through roots, pavement, mud and wet clay at depths ranging from 7½ to 10 feet! The 6-inch water main being laid will supply a new residential area in the Village of Long Lake. About this hoe, owner Robert Moore reports, "The backhoe front is well built, has good design for fast digging—we've done lots of hard digging with both our Americans—haven't had any trouble, and our operating costs are practically nil!"

"*I can dig 1,000 feet in 8 hours,*" says Lyle McKenzie who operates Moore's American Backhoe. He adds, "It's a good hoe . . . easy to operate . . . simple to adjust." Operating Moore's second American is Dennis Houle who says, "American is a beautiful handling machine. It can really move dirt . . . it's easily serviced and really easy on the operator. I'll take American over any other machine I've ever run!"

"Exceptional performance" sums up owner and operator reports on American Cranes. On every kind of job, from excavation to steel setting, these versatile, highly efficient cranes are establishing new records in production and low operating cost. For detailed information on a complete line of crawler and truck cranes in capacities that begin at ½-yard, 12½ tons, call your American Distributor soon!

(Advertisement)

CUTTING A 3,000 FOOT TRENCH in northeast St. Paul is Moore's new American Dragline equipped with a 1-yard bucket. Depths on this job range from 4 to 22 feet. Clay pipe up to 24 inches in diameter is being laid on this city-sponsored project.

Superintendent Dave Moore, who is heading up this job, reports, "I've been in the construction business for 15 years . . . I've never seen anything dig like Americans. I don't think there's another machine in their class that'll do the work they do! Our Americans have done an exceptional job for us." On fuel consumption, Moore reports 40 hours of operation on only 60 gallons of diesel fuel.

"WE GET MORE WORK FROM ONE MACHINE—OUR AMERICAN—than most contractors get from two," says owner Robert Moore. His first American dug more than 80,000 feet of trench in one year. And part of that year included a rugged Minnesota winter that freezes the ground hard as rock—drops temperatures to 30 below. In hot weather, or cold, on *any job anywhere*, American Cranes have built their reputation on performance. Owners and operators know the "working facts" about Americans, so check with them before you buy any crane!

SETTING STEEL IN TIGHT QUARTERS, this American 100 Series Truck Crane shows its precise, smoothly controlled power. Working capacities of the unusually versatile 100 Series are 12½ and 15 tons on rubber, ½-yard on crawlers. Highly mobile American Truck Cranes get to the job sooner—cut down travel time between jobs. A complete line lets you select the right American for your needs!

THROUGHOUT THE U.S. AND CANADA a network of American Distributors stand ready to serve you. Distributor salesmen familiar with your problems will help you select the American Crane to do your job best. Expert mechanics from these distributor organizations attend periodic factory schools where they learn the latest service and repair techniques that cut your operating costs. Complete service facilities, plus ample parts inventories are maintained by American Distributors. If you're going to work in a new area, you can get the name of your nearest American Distributor by writing:

AMERICAN HOIST
and Derrick Company

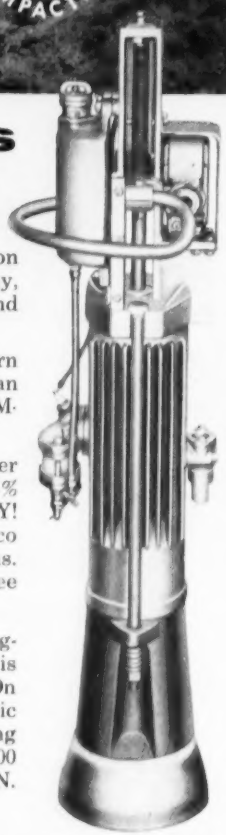
1882-1957 75 *years of service*

St. Paul 7, Minnesota

ON ROAD WORK–

Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near West Seneca, N.Y. The Barco Rammers are owned by S. J. Groves & Sons Co., Syracuse, N.Y.
(Photo: CONSTRUCTIONEER)

Barco Rammers are Essential!



CHECK THE RECORDS for *soil compaction* on every top ranking highway, toll road, thruway, or freeway built in recent years and you will find Barco Rammers!

The key to better construction—No modern trend has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects.

Easily meet rigid specifications—In test after test, Barco Rammers have delivered 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful in restricted areas. ONLY Barco can produce specified high degree compaction on lifts up to 20 inches.

Get jobs finished on time—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. ASK FOR A DEMONSTRATION.

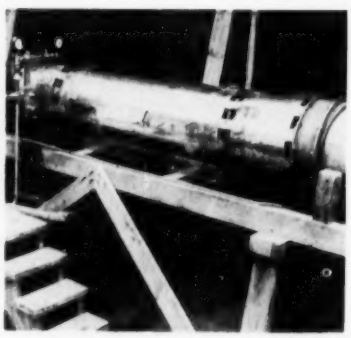
FOUNDED 1908
BARCO
PRODUCTS BACKED BY EXPERIENCE

BARCO MANUFACTURING CO.
5121 Hough Street • Barrington, Illinois

BARCO RAMMER *for High Degree Soil Compaction*
BARCO VIBRA-TAMP *for Granular Fill and Bituminous Surfacing*

EQUIPMENT NEWS . . . continued

ENTERS HEATER FIELD — Champion Mfg. Co. has entered the portable space heater manufacturing field with the introduction of the Champ-Heater 16, which will be offered in 120,000, 200,000, and 300,000 btu sizes. Principle feature of the new heater is the fact that it has a 16-hr burning capacity, which means that it can burn continuously through the night without an attendant. The heater uses an underwriter - approved Sunstrand motor and burner and because of complete fuel combustion the heater is odorless and fumeless when in operation, according to the manufacturer. — **Champion Mfg. Co., 2028 Washington Ave., St. Louis 3, Mo.**



COMPACT DUST COLLECTOR —A new type of dust collector, said to be only 1/10th the size of units with comparable capacities, has been developed by Joy Mfg. Co. Called the Microdyne dust collector, the new unit is a wet, inertial type that has collected more than 99% of five-micron dust particles in the air during tests. A wide range of sizes will be available, according to the manufacturer. The Microdyne is

WIRE ROPE AT WORK

Nello L. Teer, of Durham, N. C., has handled many tough contracts, but the one near Aliquippa, Pa., probably topped them all. This project called for the widening of Constitution Boulevard along the east bank of the Ohio River. Teer's contract, covering 2.51 miles, required some prodigious digging. An estimated 3,000,000 cu yd of rock and dirt was removed from the shale and sandstone cliffs that bordered the roadway.

While breaking the rock from the face of the cliffs, the Teer shovels frequently worked at close quarters on very narrow benches. Though it was rugged going, the schedule permitted no delays. To assure top performance of critical boom and hoist lines, Bethlehem wire rope was chosen for these assignments, and easily met every demand imposed upon it. Bethlehem rope is a natural for this kind of work, being so tough and strong that it takes the heaviest loads in stride.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

FOR MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

"More than 25% Savings on labor cost alone"

Willard Swenson
Carl N. Swenson, Inc.
San Jose, Calif.

This conservative estimate from an active Western contractor is only the beginning. With a Homelite High-Cycle Concrete Vibrator the motor is in the head. Needs only one man for operation. Runs by power from Homelite Dual-Purpose Generator which can be quickly set up by one man anyplace. No special scaffolding needed. Handles even zero slump concrete. High-cycle motor is easy to maintain . . . no brushes, commutator or armature windings to cause trouble. Generator also produces 110 volt DC for standard universal power tools and floodlights. You get savings all along the line . . . savings in time, labor, money. And you get service fast from your nearest Homelite Branch.

Also available, 110 volt AC-DC motor-in-head and electric flexible-shaft-driven vibrators.

HOMELITE
A DIVISION OF TEXTRON INC.
1010 RIVERDALE AVENUE, PORT CHESTER, NEW YORK
MANUFACTURERS OF CARRYABLE PUMPS
GENERATORS · BLOWERS · CHAIN SAWS

Complete Line of Homelite Carryable Construction Equipment Now Available

Self-Priming Centrifugal Pumps . . . Carry these lightweight, dependable pumps anywhere. Non-clogging design . . . 28 foot suction lift . . . capacities up to 15,000 g.p.h. . . . sizes from 1½" to 3". Diaphragm pump also available.

Chain Saws For Every Job . . . Now you can choose from a full line of lightweight, powerful Homelite chain saws. From 3½ to 7 horsepower . . . 19 to 29 pounds. Brush cutting and clearing attachments are available to handle all your cutting jobs.

Carryable Gasoline Engine-Driven Generators . . . Lightweight Homelite generators can be carried and used anywhere to provide high-cycle and 115 volt power for your electric vibrators, tools, and floodlights. Complete range of sizes up to 5,000 watts . . . all standard voltages.

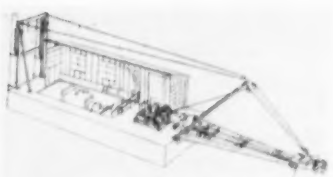
HOMELITE

a division of Textron Inc.

PORT CHESTER, NEW YORK

EQUIPMENT NEWS . . . continued

a cylindrical device with two essential parts, a mixer and an eliminator section. Dust-laden air or gas enters the unit at its mixer section where impingement takes place. Each dust particle is enveloped in water as it passes through a fine spray and then the water-enveloped dust passes through turning vanes on the way to the eliminator section. These vanes create a centrifugal force that separates the particles from the air. The dust-carrying water is captured at the periphery of the eliminator in blind louvres that are connected to a disposal sump. Cleaned air passes out of the eliminator sections through straightening vanes that recover rotation energy and cut draft losses. According to Joy, the water required is much less than that needed by comparable wet type collectors, and the design makes sure that each part of the unit is accessible for maintenance. Prototype models in various sizes already have been tested under actual working condition at mining sites and at a phosphate processing plant. The unit pictured collects dust from a pan feeder, vibrating screen, and crusher handling 17 tons of ore a day at a mine near Butte, Montana.—**Joy Mfg. Co., Oliver Building, Pittsburgh, Pa.**



PORTABLE DREDGE—Portability has been combined with high performance in a new, low-cost 8-in. dredge designed by Ellicott Machine Corp. The latest in Ellicott's Dragon line, the new model has a rated output of up to 85 cu yd per hr. It sells for less than $40,000, fob, Baltimore. Heart of the dredge is an 8-in. heavy duty centrifugal suction pump powered by a six-cylinder diesel with a continuous rating of 142 shaft horsepower. The diesel also powers the hydraulic pump that controls the cutters and winch motors, thereby eliminating the need for an additional power plant. According to Ellicott engineers, the dredge will pump mud,

How to cut forming costs

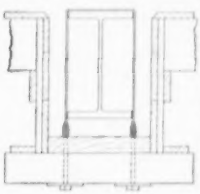
You can cut forming costs on walls, bridge piers, abutments, foundations, etc. with Sure-Grip coil ties. You use fewer coil ties because they have greater capacity. They can be assembled in panels on the ground prior to erection. Extra large panels can be used and you can pour faster. Working parts of ties are interchangeable and reusable. You save time, labor and material costs.

Coil ties are available in two strut and four strut types and in ½", ¾", 1" and 1¼" sizes. Capacities from 6,000 lbs. to 36,000 lbs. Standard or tight cones. Single coil ties also available.

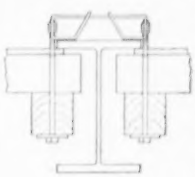
Continuous threaded rod in ½", ¾", 1" and 1¼" sizes available for use with coil ties. Makes an **adjustable** form tie and spreader. Cut the rod on the job. Ideal for jobs with many different form widths.

Coil Hangers and Facia Ties

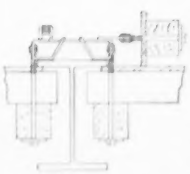
Fast, safe and economical forming methods for building slabs and fireproofing beams. Working parts are reusable.



Coil hangers are fabricated to exact specifications. Safe **working loads** per side: 3000 lbs., ½"; 7500 lbs., ¾" and 10,000 lbs., 1".



Coil hanger frames are ideal where beams are not fireproofed and where no hanger wire can be exposed after stripping. You can tighten forms against the steel and prevent concrete leakage. Available in slip fit style with nut for adjustment from the top. Also with 1 or 2 coils on 45° angle.



Same hanger frame as above, but with facia coil tie for carrying form work on spandrel beams. Screed chair base can be put on any coil hanger frame.

FREE — Mail the coupon below for 48 page illustrated catalog of concrete accessories and name of your nearest Sure-Grip dealer.

THE DAYTON SURE-GRIP & SHORE CO.
514 Kercher Street, Miamisburg, Ohio

Without obligation, send me your **free** 48 page catalog and the name of my nearest Sure-Grip dealer.

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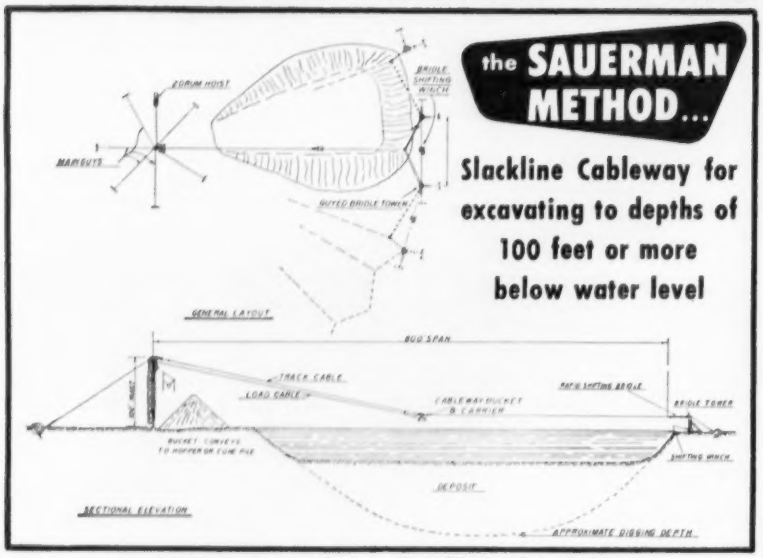
HOW TO DO A BETTER UNDERWATER EXCAVATING JOB



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Cableway at Cabinet Gorge Dam digs and hauls from tailrace 1000 ft. away. **(Full details in Sauerman News No. 143.)**

New York gravel producer switched to cableway for underwater operation of his pit. Average haul is 600 ft. from a 50-ft. depth **(Sauerman News No. 141).**

You can remove more underwater material with a long reaching Sauerman Slackline Cableway. On job after job this machine has proved to be the most efficient for this type of operation. It is especially effective where the material to be excavated has good depth and will flow to the bottom of the cut. For shallow deposits or non-caving material a rapid shifting device is used to change the line of operation.

One man controlling the hoist digs, conveys and elevates from deposit to plant over spans of 1000 ft. or more . . . across streams, lakes, bogs or deep pits. The powerful load line pull insures digging penetration. Tensioning the track cable lifts the bucket which is inhauled at high speed and dumps automatically. Gravity return completes the fast operating cycle. Bucket capacities range from ⅓ to 3½ cu. yds.

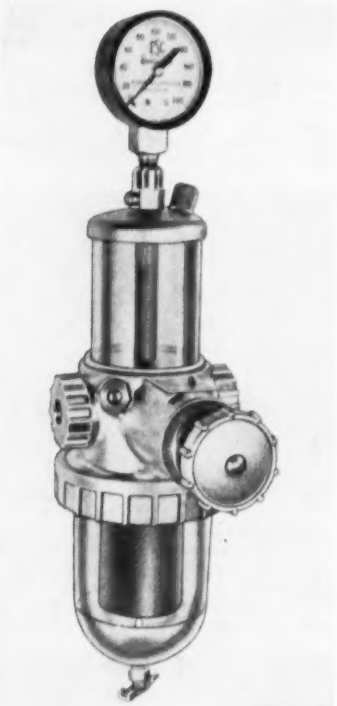
To get fast, economical long range excavation, and the shortest, most direct way from pit to pile use a slackline cableway. Contact Sauerman for specific recommendations. No obligation. Request Catalog C, showing detailed specifications and photos of slackline cableways in action on all types of deep digging jobs.

SAUERMAN BROS. INC.

612 S. 28th AVE. | BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

silt, sand, and other light sedimentary materials from a digging depth of 17 ft below the water surface, and it can transport water-bound solids through 500 to 1500-ft long pipe lines. The all-welded hull consists of two tank type pontoons that measure 32 ft long, 14 ft wide, and 4 ft deep when assembled.—**Ellicott Machine Corp., 1611 Bush St., Baltimore, Md.**



CUTS WEAR—When installed in lines ahead of air tools, a new packaged air regulator-filter-lubricator combination performs those three important jobs simultaneously. The three-in-one attachment, which requires only two connections to install, is available in ½, ⅜, ½, and ¾-in. dia sizes. The regulator operates on a balanced piston principle. Automatic bleed-off permits sensitive pressure reduction without bleeding the down-stream line. It controls the air flow down to zero, when it becomes a shut-off valve. A 0-to-2000-lb pressure gage is included. The filter incorporates a cyclonic action to remove dirt and water. A second filtering takes place as air passes through throw-away type filter cartridges that are easily replaceable. External oil adjustment

LIMA

Lima Type 604 Dragline excavating trench for storm sewer pipe in Miami, Florida. This machine and the other Lima Type 604 in the background are owned and operated by R. H. Wright & Son of Fort Lauderdale and are both equipped with 45-ft. booms.

Fast-working team of LIMAS leads the way on Miami project

Work really moves along at top speed on this storm sewer job in Miami, Florida, where R. H. Wright & Son is using two LIMA Type 604's. The dragline excavates the trench while the crane follows closely behind laying the pipe—sewer jobs of all kinds are completed fast and economically when you have LIMAS on the job.

Speed, stamina and economy on the job are assured by LIMA's built-in quality extras—such as piston-ring-type dirt seals and retainers in crawler rollers; flame or induction-hardened moving parts for longer life; properly balanced weight for maximum efficiency; anti-friction bearings at all important points; oversize drums and sheaves for long cable life, and long crawler mounting for greater stability.

Get the full story on profit-building LIMAS from your nearby distributor . . . or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

Lima Type 604 lowering concrete sewer pipe into position on the same project.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA SHOVELS · CRANES
DRAGLINES · PULLSHOVELS

BALDWIN BLH LIMA HAMILTON

BALDWIN-LIMA-HAMILTON
Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation
Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

Partners Joe Duncan (left), and Johnie Arnett, Corsicana, Texas.

"THEY GET A FULL SHARE OF CREDIT

Our Allis-Chalmers equipment has proved it can move dirt at low cost . . . and let us be low bidder time after time"!

Joe Duncan
Arnett & Duncan
Corsicana, Texas

Now building their 19th earth-fill soil conservation dam, Arnett & Duncan operate an equipment spread that includes both Allis-Chalmers motor scrapers and crawler tractors.

"With our Allis-Chalmers equipment, we can dig, haul and place dirt for a lower-per-yard cost . . . move as much dirt as higher-rated-capacity units," says Mr. Duncan. "The maneuverability and speed of our TS-360's and TS-260's cut cycle time, and the curved bowl bottom feature has brought a real boost to loading efficiency. Incoming dirt breaks up and rolls into the bowl for larger heaped loads.

"Our operators like our Allis-Chalmers equipment, too, because of the operating ease, riding comfort. You get a lot more production when your crew likes the equipment."

TS-360 motor scrapers (15 yd struck; 20 yd heaped), like that shown at left, are the "big guns" of the Arnett & Duncan fleet on earth-fill dam construction. Working with the TS-260's (11 yd struck; 14 heaped), they help make a high-production, low cost-per-yard team.

Top crawler tractor for these go-getting Texas ▶ contractors is the Allis-Chalmers HD-21—a product of 17 years of torque converter experience.

FOR OUR SUCCESS

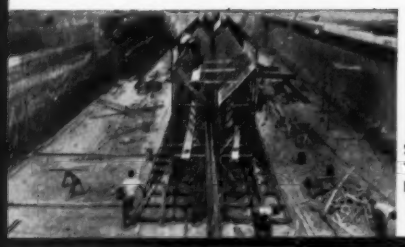
Find out for yourself how the productivity of Allis-Chalmers construction machinery can help improve your profit picture as it has for these Texas contractors. Ask your dealer for all the facts—and a demonstration of real dirt-moving efficiency. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

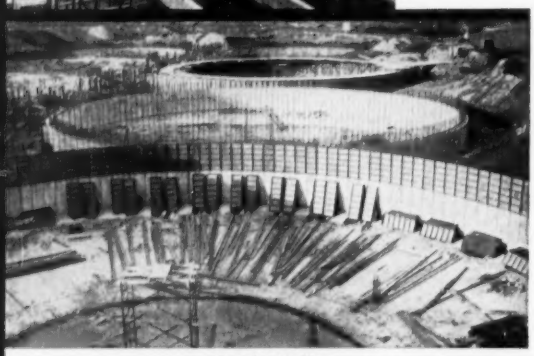
reduce forming costs...

with UNI-FORM PANELS



Sewage Treatment Plant "Y" Walls

Slabs



Circular Walls

Heavy Industrial Foundations

Whether you're bidding on a sewage treatment plant, industrial building, highway bridges, overpasses or abutments, heavy foundations, circular tanks or a warehouse, UNI-FORM Panels will give you the lowest all around forming costs.

Why? UNI-FORM Panels can be erected faster, using less labor and material because the three basic elements of the UNI-FORM System—Panel, Tie and Tie Key provide simple mechanical assembly into any type of form. Unique system of attaching the minimum aligning lumber required reduces labor by 50% . . . pre-engineered techniques for handling pilasters, corners, stepped footings, columns, battered walls assure fast job progress.

Steel framed, plywood faced UNI-FORM Panel

UNI-FORM TIE for any wall width

UNI-FORM Tie Key

3 simple elements in UNI-FORM SYSTEM

INTERESTED? Get the catalog and complete details on the UNI-FORM System today. Send us a set of plans for our recommendations. You will be money ahead, and there's no obligation.

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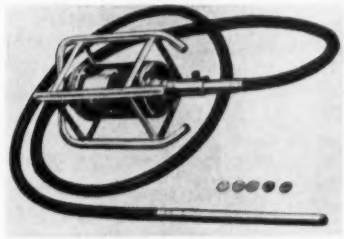
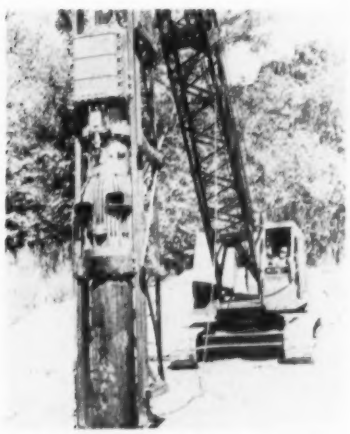
meters the lubricant, which automatically enters the air stream as an oil mist. A filler button valve permits the oil reservoir to be refilled without shutting off the air supply.—**Perfecting Service Co., 332 Atando Ave., Charlotte 6, N.C.**



SMALLEST YET—If there is a smaller vibrator head on the market than a new Wyco unit, which is smaller in dia than a five-cent piece, it hasn't been called to our attention. The new vibrator head, only ¾-in. in dia, is used for vibrating grout in masonry walls, for placing fireproofing, and for vibrating concrete in any restricted area. It comes with a flexible shaft of the same diameter in either 5 or 10-ft lengths. The head can be attached to any Wyco Junior vibrator shaft and it can be purchased as a unit with the Wyco Junior vibrating electric motor. Weight of the vibrator electric motor with the ¾-in. head is less than 20 lb.—**Wyzenbeek & Staff, Inc, 223 N. California Ave., Chicago 12, Ill.**



LINE TRANSFERRED—The diesel pile hammer line formerly produced by the Syntron Co., a subsidiary of Link-Belt Co., is now being produced and sold by the Link-Belt Speeder Corp., another Link-Belt subsidiary. The Link-Belt Speeder hammers are

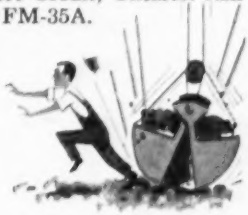
when heavy-duty equipment uses J-M Brake Blocks

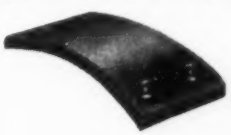
Johns-Manville Brake Blocks deliver the safe, dependable performance that frees your drivers from worry about personal danger. And remember, it's much easier to replace linings than good operators. You get more out of your equipment too, in terms of working time and "pay loads" handled.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for outstanding performance plus maximum service life on trucks, shovels and heavy machinery.

Johns-Manville makes a wide range of industrial friction materials such as linings, facings, cones and segments that are "original parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are available in Johns-Manville Assembled Sets that assure greatest safety in your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario. Ask for booklet FM-35A.





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INDUSTRIAL FRICTION MATERIALS

. . . big D-6 bulldozer loads in just 2 minutes . . .

. . . on MILLER "OT"-13 DUAL TANDEM Tilt-Top

Model "OT"-13 tandem $2,295.00*

. . . and it takes only ONE man to do it!

You get all the speed . . . the easiness of Tilt-Top* loading . . . combined with the BIG LOAD capacity of a low boy on MILLER'S "OT-13" dual tandem. Whatever you haul . . . dozers, pavers, trenchers, front-end loaders or backhoes, you'll load them faster . . . slash between-job-hauling time with a MILLER Tilt-Top! The "OT-13" 's over the wheel's platform provides a full 8 ft. width and nearly 17 ft. in length. Independent acting walking beams are mounted on trouble free Timken roller bearings . . . minimize jarring on rough ground. Save the cost of slower loading, more cumbersome trailers . . . with a Tilt-Top to suit your needs. Several different models from 3 to 13 tons capacity – all provide ONE man TWO minute loading. See these time saving, production boosting Tilt-Tops at your MILLER distributor today!

*F.O.B. Milwaukee
Complete with platform and tires. Any optional equipment extra.
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Tachographs help cut down "lugging"

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The RPM Tachograph is a recording tachometer which gives your operators a constant guide for proper engine operation, flashes a warning light when predetermined control speed is exceeded, and provides supervisors with an accurate charted record to check operator performance. In addition to engine speed in RPM, the Tachograph chart records time, total engine revolutions, and OFF periods.

A small investment in an RPM Tachograph for every diesel engine you operate can pay big dividends by reducing costly "lugging."

Tachographs are easy to mount and position on the instrument panel, are ruggedly built and tamper-proof. Bulletin SU-107 tells the whole story—mail the coupon today.

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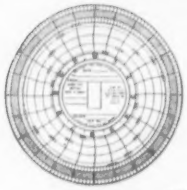

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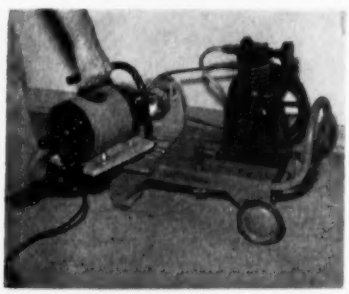
Company_____
Address_____
City_____ State_____
We operate_____ Vehicles
(NUMBER)

SS7-10

easily transportable, self-contained, and one-man controlled. The new line includes three models that can be used with any make of power crane: The model 105 delivers up to 7,500 ft-lb per blow and strikes 90 to 98 blows per min; the model 312 delivers up to 18,000 ft-lb per blow at from 100 to 105 blows per min; and the model 520 exerts up to 30,000 ft-lb per blow and delivers 80 to 84 blows per min. The hammers range in length from 10½ in. to 13½ ft and weigh from 3,600 to 12,500 lb. Prices range from $8,250 to $16,500. The new hammers are free-piston, compression ignition types that operate on the two-cycle principle. Energy is delivered to the pile head through the anvil in three stages—pre-load, impact, and explosive force. The Link-Belt design incorporates a closed cylinder top that traps and compresses air to form an "air spring." This limits the upward travel of the ram, accelerates the ram downward, and enables the hammer to obtain extra blows per min. This design is said to result in a shorter overall length and to prevent the entry of any foreign matter into the cylinder. One man can operate the hammer with a remote hydraulic throttle control system from either the cab of the crane or from the ground. He can vary the force of the blow and can stop the hammer when the piling has been driven to the required depth. Ease of starting and a cam-operated lubricating pump operated by the ram's up and down movement are other features. — **Link-Belt Speeder Corp., Cedar Rapids, Iowa.**



RUNS SEVERAL TOOLS—With a new plug-in electric motor attachment, a single motor can be used to operate a whole range of shop tools. Called the Power-All, the unit consists of two basic

MALSBARY MAINTENANCE CLINIC

Mobile Steam Cleaners Pay Off

"All Equipment gets more frequent attention; no trucks or graders need be out of action long for cleaning; and the cleaner adds punch to our toughest assignment, keeping highways open and safe during winter storms," reports Brown County, Wisc., of this trailer-mounted Malsbary 250 HPC (high pressure combination) cleaner. In winter, it removes snow and ice from snow plows, trucks, highway patrol squad cars, and thaws out frozen culverts to prevent road flooding. During summer, it speeds maintenance by going to roadbuilding jobs and cleaning blacktop equipment "every chance we get."

Asphalt and Dirt stuck so stubbornly that servicing—even greasing—first required its removal from the roadbuilding equipment of The White Construction Co., Milwaukee, Wis. This literally had to be done with a shovel. Now a Malsbary 250 HPC cleaner, mounted on same truck as lube equipment, takes steam cleaning right to the job, "does in minutes what used to take hours." Says Foreman Ellerman, "Malsbary cleaning certainly speeds greasing and other maintenance."

Tricycle-Mounted Malsbary 250 HPC is easily pulled around large equipment yards and shops, or over uneven ground on field jobs. It speeds service work by taking steam cleaning to the job—no carting big assemblies to the cleaner or trying to squeeze heavy rigs into small cleaning sheds. Brackets for holding coiled hose and steam gun eliminate dragging, enable you to take full advantage of tricycle portability.

110

Whether you use portable or stationary Malsbary High Pressure Combination cleaners, you're sure of fast cleaning—4 to 10 times faster than most other cleaners, and at ½ to ⅕th the cost. For proof call your Malsbary dealer (see yellow pages of phone book) and ask for a demonstration . . . or write us for literature showing how Malsbary steam cleaning pays off for other successful earth-movers and dealers.

FOR **MALSBARY** Sales & Service see yellow pages

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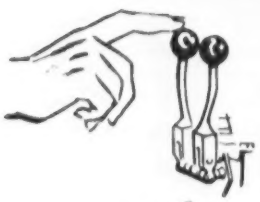
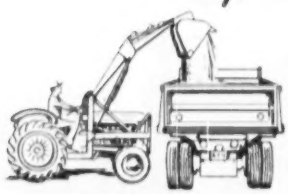
More than 175 Authorized Service Centers in U. S. and Canada.

Look at the lift, compare the price...see how FORD GIVES YOU MORE!



Time the Cycle

Total cycle time of the Ford Loader is less than 11 seconds. Steady operation loads up to 568 yards or 113 truck loads in 8 hours. Tractor hydraulic system is free for use with rear-mounted tools.

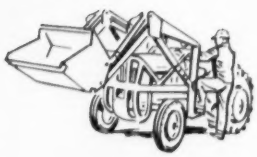


Look at the Lift

10' 10" lift to bucket bottom; 8' 6" to bucket lip, dumped; 26" reach dumped at full lift. Generous clearance over average 7' 6" truck side. Fill entire truck from one side without "flipping".

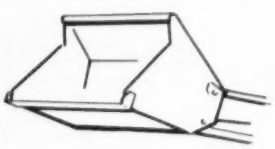
Try the Steering

Compact, close-coupled, maneuvers well in areas other rigs can't even enter! With power steering, a factory option, effortless one-hand steering even on roughest ground leaves other hand free for loader controls.



Measure the Load

993 lbs., average bucket load—a yard in the truck every 3 cycles. Ford's 2500 lbs. breakaway—more than any other 1000 lb. rated loader—gives faster, easier loading of packed or frozen material.



The Ford Tractor-Loader out-performs any rig in its capacity class and many "bigger" tractor-loaders. Before you buy, *compare!* Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.

Ford
TRACTORS AND INDUSTRIAL EQUIPMENT

You see more **FORDS** *because they save more money!*

parts. A motor base attachment includes a base plate, handle, and flexible clutch. It fits all standard motors from ½ to ¾-hp. The other unit is a pulley base that includes a base plate, bearing support frame, bearing bracket, and clutch drum. The pulley base is bolted down to the regular motor mounting position for power-driven shop tools. With pulley units installed on several power tools in a shop, a single motor base unit can be used to run any of the machines by sliding it into place and starting the motor. The base can be shifted quickly from one machine to the other.—**Graybill Industries, Inc., 2907 N. Monroe, Spokane, Wash.**

B 'PULL GETS TC — LeTourneau-Westinghouse now offers a choice of transmissions—a torque converter or manual shift-type—in its big B Tournapull prime mover. According to the company many related mechanical changes were made to match the converter and the prime mover, the most important of which is the adoption of a bigger 335-hp turbocharged diesel as standard equipment for torque converter models. The new transmission, which is being built for LeTourneau-Westinghouse by the Allison Div. of GMC, consists of a single stage, four element torque converter combined with a power shift gear box. Four forward and two reverse ranges provide speeds up to 30 mph. Two auxiliary features are included as standard equipment on the torque converter models. An automatic lock-up clutch eliminates power-consuming slippage in the converter at haul speeds. In 2nd, 3rd, and 4th ranges above 1850 rpm, when torque multiplication is not needed, the unit is automatically put into a direct drive with the torque converter locked out. When rpm drops below 1850, the clutch automatically disengages to bring the torque converter into operation again. Another standard feature is a brake-saving hydraulic retarder. This unit, which operates in a separate chamber behind the converter elements, automatically provides counter pressure when descending grades in any forward range. Developing a retarding force of up to 1,200 lb ft of torque, it makes use of service brakes necessary only for bringing the LeTourneau-Westinghouse prime mover to a full stop under most conditions.—**LeTourneau-Westinghouse Co., 2301 N.E. Adams St., Peoria, Ill.**

UTILITY CRANE—The Hydra-X-Cavator features a hydraulically operated boom with 360-deg swing left or right, and road speeds up to 40 mph. The excavator handles a ⅜-yd back-hoe and

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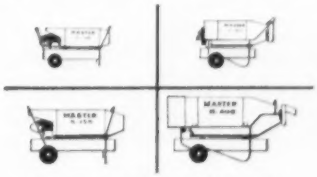
HEATER!

We'll forget the cold weather and keep your winter profits high

"We won't be slowed down by cold weather. And we'll be a lot more comfortable, too, with a Master heater on the job.

"It puts out a steady stream of warm air wherever you want it. You can plaster, pour concrete, thaw and dry materials, spot heat outside, etc. It's portable, just wheel it around, plug it in and flip the switch. It'll run for 16 hours or more on a tank of kerosene or fuel oil. And for only 30c an hour it puts out enough heat to warm the biggest jobs. It's perfectly safe, too, boss . . . doesn't need a vent. So see your Master distributor, or write for all the facts on the new Master B-250 and other models. You'll see that only Master has all the features you want. No obligation."



100,000; 160,000; 250,000 and 400,000 BTU/hr. units available.

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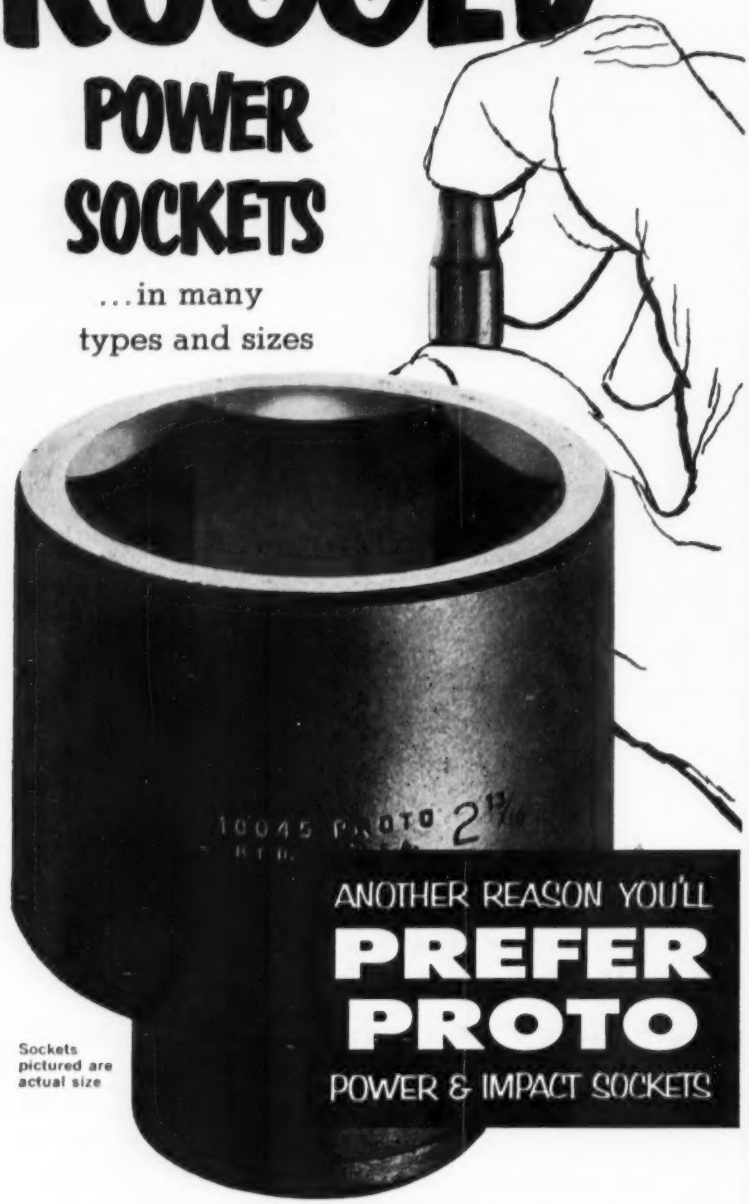
...in many types and sizes



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Sockets pictured are actual size

Protoloy alloy steels, scientific heat treatment and advanced design give Proto sockets extra strength... plus... high safety factor, long life, low cost. Send 10¢ for 84-page tool catalog. Proto, 2208 Santa Fe Ave., Los Angeles 54, Calif.

MANY TYPES AND SIZES

Standard sizes
from 3/8" opening in 1/4" drive —to 3 1/8" opening in 1" drive.

Special sizes
up to 9 1/4" opening in 2 1/2" drive.

PROTO TOOLS
PROTO means PROfessional TOols

DIVISION OF

50 YEARS TOOL PRODUCTIVITY 1907-1957

other attachments including a shovel, crane, clamshell, grapple, ditch cleaner, and catch basin cleaner. With the backhoe attachment, the machine has a digging depth of 11½-ft. It is powered by a six-cylinder Continental engine and is equipped with a four-speed truck transmission and clutch. The all-hydraulic machinery drive is powered by a 30-gpm pump.—**Davis Engineering, Inc., M-139 North, Benton Harbor, Mich.**

SPREADERS—A new line of tire spreaders will handle all sizes from the smallest pick-up truck tire up to 37.5-33 tires. The four models in the line can be operated from any air supply. A roll-up ramp that eliminates tire lifting, bench mounting, and complete portability are other features. The spreaders handle both regular and tubeless tires.—**Salsbury Corp., 1161 E. Florence Ave., Los Angeles 1, Cal.**

ECONOMICAL TRAILER — Introduction of a new 12-ton capacity low-bed trailer, which lists for less than $2,000 fob factory, has been announced by La-

Here's one of Tillett Brothers' Cat D9 Tractors push-loading on the Alabama by-pass job.
Both D9's are equipped with torque converter drives utilizing Twin Disc components.

"Torque Converter Equipped D9's save up to $600 a month,"

says Joe Tillett Jr., Tillett Brothers Construction Co.

When Tillett Brothers Construction Co., Shelbyville, Tennessee, was awarded a by-pass project just north of Montgomery, Alabama, this firm brought in, among other equipment, five Cat DW21 Tractors (two pulling No. 470 Scrapers and three pulling No. 21 Scrapers) and two big Cat D9 Tractors equipped with torque converter drives for push-loading.

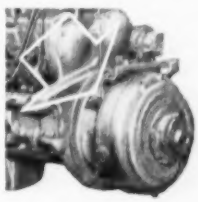
Once in operation, and with the break-out pattern naturally staggered, the two torque converter equipped D9's handled all five tractor-scraper combinations—even on the shortest hauls!

What does Joe Tillett Jr., President of Tillett Brothers, think of torque converter equipped D9's? "By increasing production and reducing maintenance," says Mr. Tillett, "the torque converter drive saves about $600 a month."

There are several good reasons why leading contractors like Mr. Tillett can produce such savings from torque converter equipped machines. The torque converter, for example, multiplies engine torque up to 6:1 when required. It permits the engine to deliver constant high-horsepower output. It automatically matches power to load demands, with gear-shifting minimized or eliminated, for increased operator efficiency. Heavy load pick-up is smooth and even, without clutch slippage. Shock loads and vibrations are cushioned out through the converter's fluid connection, for long tractor life and minimum maintenance. An infinite variety of ratios is available to work with, permitting smooth, accurate control of loads.

Caterpillar Tractor Co. offers its torque converter drive as optional in D9 and D8 Tractors, and has standardized on Twin Disc Torque Converter components for these versions of the two models.

See your Dealer today for complete information on torque converter equipped crawlers. Try one of these machines on your next contract and see for yourself how they get more work done on a comparative basis.



TWIN DISC

TWIN DISC

Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division), Rockford, Illinois

unequalled PRECISION

in design and workmanship, dependability and an efficient service are qualities a competent shovel maker has to meet. In rating an Excavator you cannot overlook these.

DEMAG Baggerfabrik present a fine example of painstaking engineering work, a Shovel-line you can rely upon.

The DEMAG Series-400 Shovel-line has air-control for all movements. All operations are controlled by two levers from the panoramic cab which is isolated from the machinery house.

AIR-CONTROL ADVANTAGES: easy operation, faster working cycles, anti-fatigue control.

It was not until exhaustive field tests were passed satisfactorily that the "green light" was given for series production of this new DEMAG-line of air-controlled Shovels.

¾ cu. yd. Model B 406, crawler-mounted;
¾ cu. yd. Model B 406, wheel mounted;
takes motive power from deck engine and makes up to 13 mph on the road;
¾ cu. yd. Model B 406, Truck Shovel
with a separate carrier engine, makes up to 38 mph on the road;
1 cu. yd. Model B 408, crawler-mounted,
1⅜ cu. yd. Model B 412, crawler-mounted;
2¼ cu. yd. Model B 418, crawler-mounted;

These advantages can all be yours! Our regional offices and a team of service engineers are available for on-the-job consultation without obligation or charge.

You will want to learn more about all the benefits you get from air-control. Write today for Bulletin 1/57 which tells you all about it.

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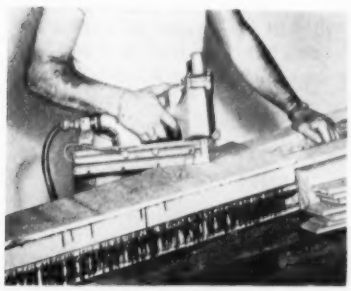
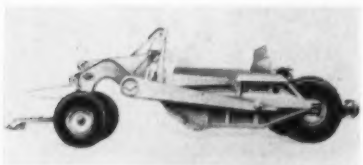
Crosse Trailer Corp. Called the DFS-12, the new single-axle semi makes use of two main beams and full length outer channels as load carrying members. Designed for use behind standard fifth-wheel tractors, the trailer has a 8x14-ft oak deck platform with a 41-in. gooseneck and a 2-ft beavertail. It comes equipped with four 8.25-15 tires, ICC lights, lash rings, and 12½x6-in. air or vacuum brakes. The trailer has a 6x6-in. H-beam cambered axle designed to handle gross loads of 17,800 lb, with 10,650 lb on the kingpin. LaCrosse now offers over 80 standard production model low beds, ranging in capacity from 6 to 75 tons.—**LaCrosse Trailer Corp., LaCrosse, Wis.**



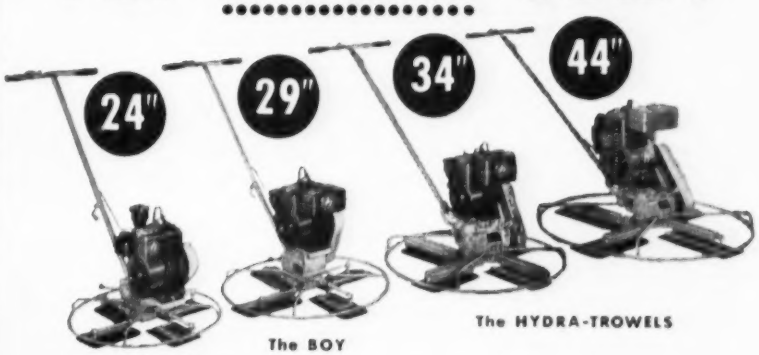
AUTOMATIC NAILER — The OHL Spotnailer operates as fast as the operator can thumb a button. The new device will drive 1½-in. fasteners (the equivalent of 6d nails) into the hardest of woods without recoil. The gun is completely pneumatic and no piston-return springs are employed. The new tool requires no more than 100 psi, and on a cu ft per min basis it uses very little air. **—Spotnails, Inc., 1527 Lyons St., Evanston, Ill.**



LOWBOWL SCRAPER — Caterpillar has replaced the No. 70 scraper in its line with the new No. 435 Lowbowl Scraper. The new unit is designed for use with the Cat D7 crawler. The four-wheel scraper features a low silhouette that allows material to enter the bowl with a minimum of lifting effort and material-to-material friction. The new

Kelley POWER TROWELS

for EVERY Job!



The BANTAM The BOY The HYDRA-TROWELS

LOOK! ONE HAND!
Low center of gravity makes Kelley trowels stable, easy to operate. No pulling or tugging. No gyrating. You never have to "fight" a Kelley machine.

LOOK! ONE HAND!
Imagine...down a ladder with one hand! That's what you can do with the light, easy-to-carry BOY and BANTAM. So compact you can put it in the trunk of your car.

Here's the BIG, NEW Kelley line, the best power trowels on the market! For the big jobs...two easy-operating HYDRA-TROWELS, 34" and 44", with the exclusive Kelley hydraulic action. A flick of the finger on the control lever sets the 4 dual-purpose blades for floating or finishing any type of floor finish desired. For the smaller jobs...the Kelley BANTAM, 24", and the Kelley BOY, 29". Small for portability and bears for work!

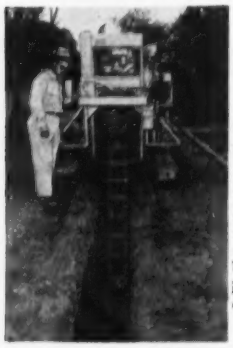
Kelley machines are unmatched for their easy operation. Low center of gravity assures stability, prevents gyrating. All Kelley machines have 4 big, dual-purpose blades for both floating and finishing. Stationary guard ring works right next to walls and makes carrying easy. But above all, Kelley machines put quality, hand-troweled finishes on your floors without back-breaking drudgery.

Kelley MACHINE DIVISION, Wiesner-Rapp Co., Inc.
283 HINMAN AVE., BUFFALO 23, N. Y.
Please send me information on the
☐ HYDRA-TROWELS ☐ BANTAM ☐ BOY
NAME _____
STREET _____
CITY _____ ZONE _____ STATE _____

3 FAST RUGGED LOW COST

Pow-R-Ditchers

A Model For Nearly Every Need

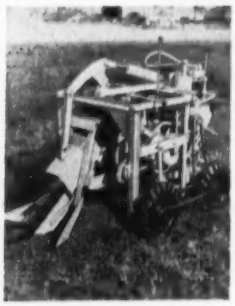


Model 524T Pow-R-Ditcher

Lowest priced BIG ditcher on the market! Digs 8"-24" wide at speeds of 1'-15' per minute. One man operation. Ideal for contractors, municipalities, utilities, etc.

Model 4T Pow-R-Ditcher

The Vermeer "Midget Ditcher" digs 6"-14" wide and is only 6' high, 13' long, 48" wide. Easily transported on a pick-up truck. Very maneuverable and ideal for footings, cable, gas, water and sewage lines.



Model W-2 Pow-R-Ditcher

Smallest of the Pow-R-Ditchers, the W-2 digs 2½"-4" wide and 3' deep. For gas service, electrical service and shallow water lines.

Write For Literature and Low Prices on the Complete Vermeer Pow-R-Ditcher Line

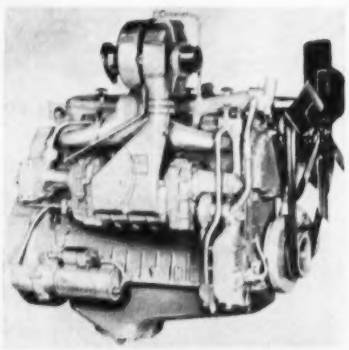
Thousands of Pow-R-Ditchers used from coast to coast. Learn what low ditcher prices really mean! Write for name of nearest dealer.

VERMEER MANUFACTURING CO.

1435 W. WASHINGTON • PELLA, IOWA

EQUIPMENT NEWS . . . continued

scraper, which offers more bottom area than the previous model, has a struck capacity of 13 yd, a 27% increase over the No. 70. Heaped capacity is 18 yd. To assure better ejection, the ejector of the No. 435 is higher and the apron opening has been enlarged. Rock guards are standard equipment. The Lowbowl design also provides greater stability because the center of gravity of the loaded unit has been lowered. The No. 435 has a maximum cutting width of 9 1/3-ft as compared with the previous model's 8½-ft cutting width.—**Caterpillar Tractor Co., Peoria, Ill.**



NEW DETROIT DIESELS—A new line of diesel engines, the series 71-E and 71-T, have been developed by the Detroit Diesel Div. of General Motors Corp. The new engines are the four-cylinder 71-E with a rating of 140-brake-hp at 2100 rpm, and the six-cylinder 71-E with a rating of 210-hp at 2100 rpm; the turbocharged four-cylinder 71-T with a 171 hp rating at 2,300 rpm and the turbocharged six-cylinder 71-T (above) with a 236-hp rating at 2,100 rpm. The design of the new series provides better combustion and freer engine breathing than previous models and the result is greater economy. They are designed for trucks ranging from 26,000 to 60,000 lb, gvw. The E series features four exhaust valves per cylinder, instead of the conventional two, to insure the expelling of all exhaust gases. Fuel injectors have newly designed spray tips that increase the atomization of fuel. This results in reduced fuel consumption.—**Detroit Diesel Engine Div., General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich.**

continued on page 211

COMMENT

from the

BUTLER ENGINEER

. . . of a New Paving Record and the Airflomatic

News: a paving contractor in Michigan laid almost a mile of pavement 24 feet wide, 9 inches thick in 9 hours. Had the new Butler TX4 Roadbuilders Plant feeding 3 dual drum pavers . . . And now, having hung up this record, he can't wait to add a fourth paver. When Butler reigns it really pours!

Best production we'd heard of was a contractor who did 4,368 feet of pavement 24 feet wide and 10 inches thick in a 16-hour day. When the Michigan contractor adds that fourth paver (which the Butler TX4 can easily accommodate) we'll have more hot news for your eager eyes.

By the way — *only one operator handled the batching.*

There's a Central Mix Plant in Iowa which we bid on some years back. One of the johnny-come-lately manufacturers bid just a hair or two lower. Plant was built — expensive concrete bulkheads and automatic controls. It never worked a full day; valves, cylinders — something critical forever breaking down! Owner finally sold it to a competitor (who had a Butler Plant). He called in the Butler Engineer. It cost over $6000 to make the corrections. Moral? Well, write your own.

The new Butler Airflomatic Cement Feeder's a sensational success. Standard now on the TX4 Roadbuilders and Butler Ready Mix Plants. Cement flows on a cushion of air. No moving parts; no drives or bolts to shear. Replaces troublesome vane-feeders. Can be installed on any plant regardless of make. Why not write for all the dope?

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

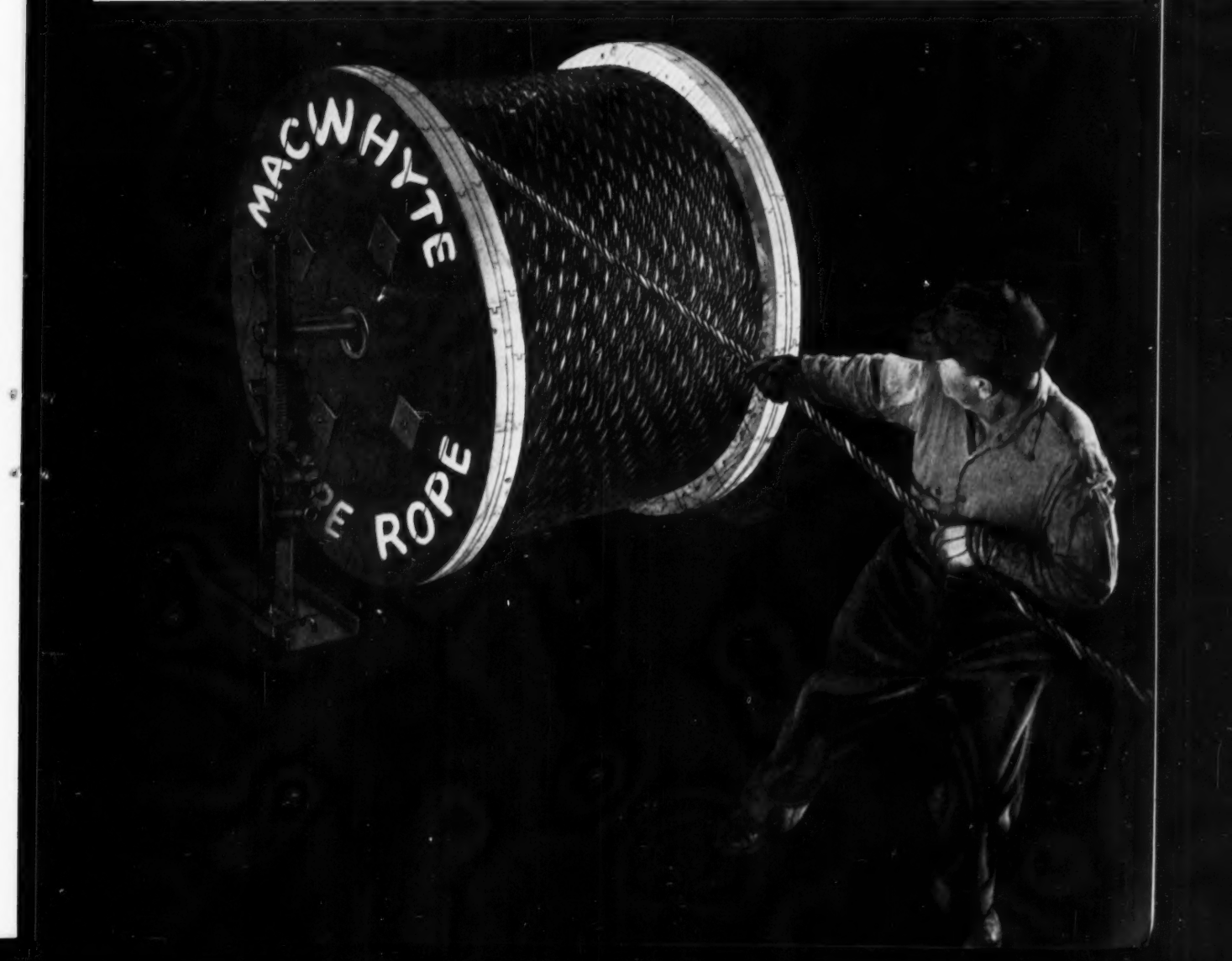
WHYTE STRAND WIRE ROPE

1000 & 1 Macwhyte Wire Ropes serve your equipment the sure, dependable way

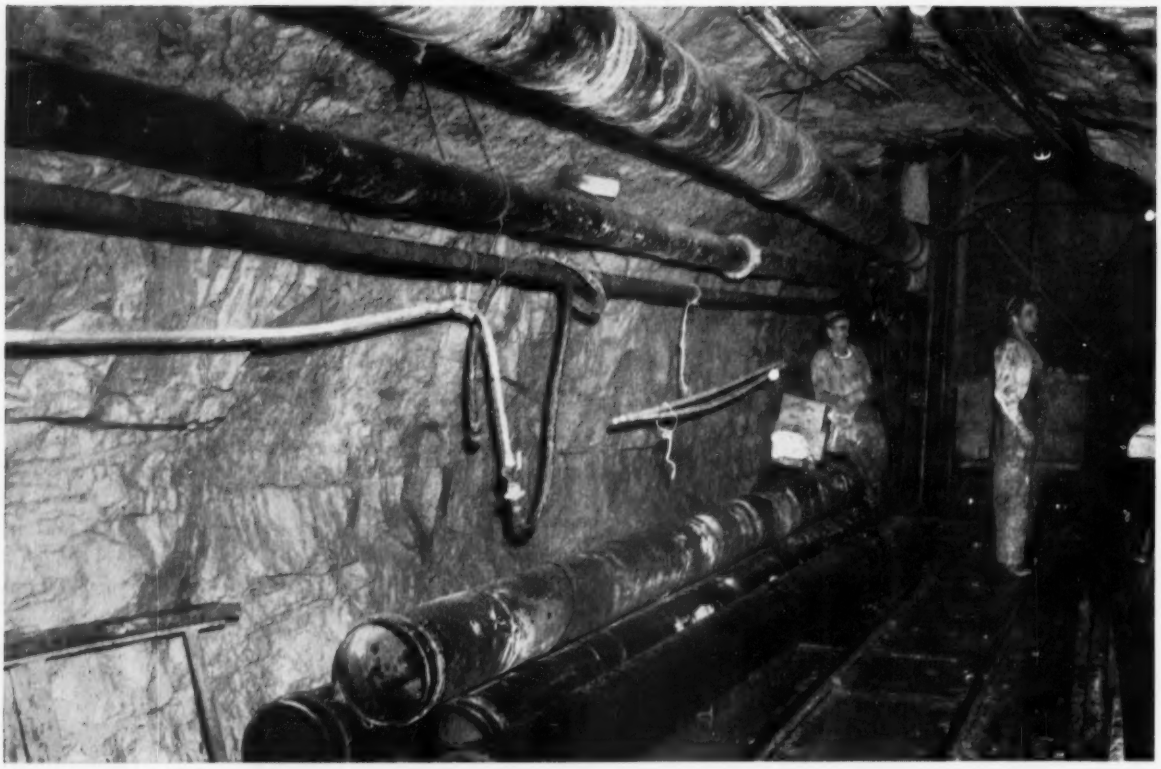
WHYTE STRAND by Macwhyte is designed to meet your every requirement. It is PREformed for flexibility, and internally lubricated for outstanding service in any operation. Macwhyte Wire Rope is in stock for immediate delivery. Ask for Catalog G-16 and recommendations for the correct wire rope for your equipment.

MACWHYTE COMPANY
2906 Fourteenth Avenue, Kenosha, Wisconsin
Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel and Plastic Coated Wire Rope, and Wire Rope Assemblies. Special catalogs available.

MILL DEPOTS: **New York 4,** 35 Water St. • **Pittsburgh 36,** 353 Old Curry Hollow Road • **Detroit 3,** 75 Oakman Blvd. • **Chicago 6,** 228 S. Desplaines St. • **St. Paul 14,** 2356 Hampden Ave. • **Ft. Worth 1,** P.O. Box 605 • **Portland 9,** 1603 N.W. 14th Ave. • **Seattle 4,** 87 Holgate St. • **San Francisco 7,** 188 King St. • **Los Angeles 21,** 2035 Sacramento St.



VITAL INGREDIENT FOR TUNNEL CONSTRUCTION



You can't see it, but you couldn't build tunnels without fresh air to sustain life underground.

That's why contractors depend on ventilating lines like these made up of Naylor Spiral-Weld pipe—the one light-weight pipe with the exclusive spiral-lockseam structure that assures strength and safety with economical performance.

Naylor pipe is light in weight. It speeds handling and installation. Naylor pipe is strong. Has what it takes for push-pull ventilation. Naylor lines can be made up quickly—especially with the one-piece Naylor Wedgelock coupling that can be connected with only one side of the pipe in the open.

Keep in mind, too, that the Naylor structure permits the use of lighter gauge material without sacrifice of strength—a factor that adds to the over-all economy of this distinctive piping.

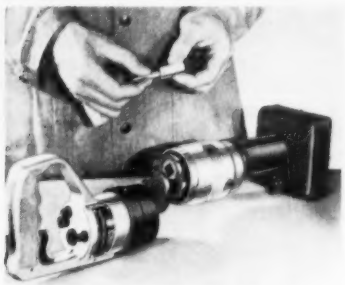
Write for Bulletins No. 507 and No. 514.

NAYLOR

NAYLOR PIPE COMPANY
1267 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office:
60 East 42nd St., New York 17, N. Y.

SPRAY LUBRICANT—The Whitmore Mfg. Co. is now packaging its liquid gear lubricant in a new 16-oz push-button aerosol container that allows the lubricant to be applied to open gears from distances of from 12 to 18 in. The fine spray covers completely and eliminates harmful metal-to-metal contact by putting the wear on the lubricant rather than on the metal. The lubricant is nontoxic, odorless, and waterproof. It is available in light, medium, and heavy grades. — **Whitmore Mfg. Co., Cleveland 4, O.**



PREVENTS MISTAKES—A new stud driving tool, reported to stop an alloy steel fastener in its tracks should it be fired mistakenly into a soft or insubstantial material, has been announced by Remington Arms Co., Inc. Like previous models, the new driving tool is powered by a 22 caliber blank cartridge, but its new design prevents the possibility of complete penetration of any structural material by the fastener. It is called the Model 455A stud driver and it is equipped with the model 440 Captive Stud Guard Assembly. If a stud is fired, unsupported by the necessary concrete or steel backing, a captive piston is arrested by an aluminum buffer in the guard assembly and piston and stud are halted at the muzzle of the stud driver. In normal use the piston and buffer do not engage. But if the tool is applied to a penetrable work surface the buffer arrests the piston, thereby

New Optical Plummet Built into Gurley Transit Saves Set-up Time, Improves Accuracy on Windy Days

Years ago, Gurley introduced lightweight instruments to combat wind vibrations. Now Gurley further beats the wind problem with an optical plummet *built into* the instrument.

The new Gurley Optical Plummet Transit eliminates swing and sway of the cord and plumb—always time-consuming and exasperating on a windy location, and inaccurate as well. Positive accuracy of set-up is assured with the Gurley Optical Plummet.

The new Gurley transit is furnished with a tripod with built-in shifting head, and allows a two-inch shift of the instrument over the point. This provides greater latitude in initial set-up.

Gurley's new Optical Plummet Transit offers one of the advantages of the optical-reading theodolite *plus* the desirable features of simplicity and universal acceptance of the American transit. For further details, write for Bulletin OP-57.

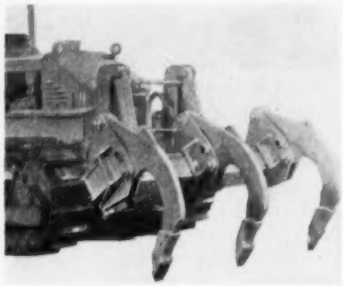
GURLEY

W. & L. E. GURLEY Fulton Street, Troy, New York

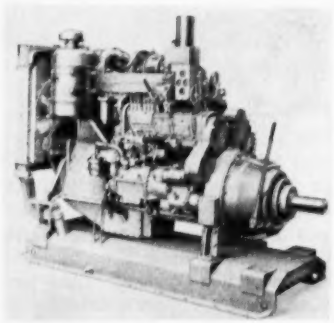
Gurley—Since 1845

restraining the stud from complete penetration or free flight. The square aperture of the aluminum buffer is off-set 45 deg to the square bore of the barrel in which the piston and stud travel. If the stud overdrives more than ⅜ in. the corners of the piston head imbed in the flats of the buffer and the piston and stud get no further than the muzzle. The deformed buffer is easily replaced and operations can continue. The tool can anchor wood to steel or concrete, wood or steel to steel, or threaded fasteners directly into steel or concrete. — **Remington Arms Co., Inc., Bridgeport, Conn.**

ROCK RIPPER—Latest addition to the Ateco line of tractor-mounted rock rippers is a 7,025-lb unit designed for the Eimco 105 tractor. The ripper can carry up to three shanks on swivel mountings that allow them to swing 30 deg. Either curved gooseneck shanks for rock ripping or a straight shank for ripping sandstone, caliche and similar materials are available. Seven different types of self-sharpening points are offered. A special drawbar design takes all draft loads, preventing strains on the



tractor transmission case. The ripper control utilizes the tractor hydraulic system, and does not interfere with loader or dozer operations. Maximum ripping depth is 24 in. Overall width of the head frame is 102 in., and the distance between shanks is 43 in. The unit weighs 5,940 lb with two shanks and 7,025 lb with three shanks.—**American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Cal.**



D9 POWER PLANT—The Caterpillar D353 engine, which powers the D9 tractor, is now available as a stationary industrial model and as the power plant for Cat electric sets. The six-cylinder, four-cycle engine has a 6½-in. bore and 8-in. stroke and is rated at 390 hp at 1,300 rpm. The rated output of the Cat D353 electric set is 200 kw. The turbocharger on the D353 utilizes waste energy from engine exhaust gases to pack more air into the cylinders. This results in more complete combustion of fuel and increased engine horsepower. The engine features the Cat fuel system which allows

PRIME-MOVER M15A FOR BUILDING CONSTRUCTION Places 12 to 17 cu. yds. of concrete per hour on school, hospital and commercial projects — *without* extensive preparations for its use. Runs on same type of ramps, hoists and runways as hand carts. Available with flatbed, or 10 cu. ft. bucket.

M15A
PRIME-MOVER
M30

FOR HIGH VOLUME, LOW COST PLACING OF CONCRETE AND OTHER BULK MATERIALS — USE PRIME-MOVER POWER!

• PRIME-MOVER M30 FOR ENGINEERED CONSTRUCTION

Hauls ⅔ yard or 1-½ tons. Unloads transit mixers fast. Spots concrete right where it's needed on plant, warehouse, pier and bridge construction. Hydraulic Torque Converter Drive frees the operator from shifting, clutching and wasted effort. Rugged, dependable. Bucket and flat bed.

FOR COMPLETE DETAILS WRITE TO PRIME-MOVER CO., MUSCATINE, IOWA

HEAVY-DUTY TRUCK CRANE takes to the hills

Shows No Strain on Difficult Terrain, Even With 130 Feet of Boom and Jib

Hillside apartment buildings give residents a beautiful view. But their construction can raise some not-so-beautiful problems.

Each 6-story unit in this group of luxury apartments going up on the steep slopes of Montreal's Mount Royal requires the setting of 600 concrete joists. And each joist weighs 1000 pounds.

A Marion 43-M Truck Crane was brought onto the job after another firm, using competitive equipment, declared they were unable to accept conditions of the assignment. They felt their machine could not maneuver safely on the rugged site with the 100-foot boom and 30-foot jib needed to reach up and across the top floors.

The Marion has lifted and placed more than 6500 of the heavy joists at a rate of 160 per day. The dependability and adaptability of the 43-M Truck Crane on this difficult terrain has evoked praise from the building foreman.

Four-axle stability, heavy-duty construction of the machine, easy operation and precision placement with Marionair Control—these are the 43-M features which can solve unusual job problems for you, too. Ask your distributor for complete information about this or any machine in Marion's extensive line which meets your job requirements. Find out about today's 40-ton 43-M Truck Crane.

MACHINE	Shovel Capacity	AVAILABLE AS . . .			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
87-M	—	—	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

MARION **POWER SHOVEL COMPANY**

A Division of Universal Marion Corporation
Marion, Ohio

SEND ME information about **MARION** ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted). ☐ Have a salesman call.

NAME ..... TITLE .....

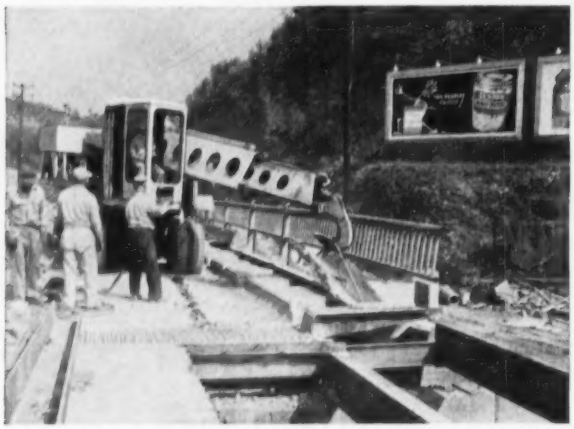
COMPANY .....

STREET .....

CITY ..... ZONE ..... STATE .....

Gradall, with Vulcan 100 Piledriver, breaks concrete to expose reinforcing rods.

Gradall holding concrete in position while a reinforcing rod is cut.



After snaking the concrete from under guard rail, Gradall lifts slab from deck.

Holding freed concrete, the Gradall loads into trucks or moves to end of bridge to deposit load.

"You can do more with a GRADALL than any other piece of equipment" *says Louis Wescott Construction Co.*

Gradall cuts costs on all these turnpike jobs!

- Digging gutter and drainage ditches
- Structure excavations—headwall, stilling basins, etc.
- Trenching for under drain and large drains
- Placing concrete culvert and drainage pipe
- Backfilling
- Sloping and grading
- Rip-rapping
- Pulling concrete forms
- Loading out and spreading top soil
- "Hand finish" jobs

TO HELP in widening Route 22, connecting Pittsburgh's Interbelt Freeway to the Pennsylvania Turnpike, Gradall was called upon for the difficult task of removing bridge deck, digging footers, stripping forms and many other jobs.

Also in the words of company President Louis Wescott, project subcontractor, "The Gradall is the most adaptable piece of machinery I own. My trencher, backhoe and high lift are all excavators, but they are specialized. The Gradall will do all the jobs they can do *and more.*"

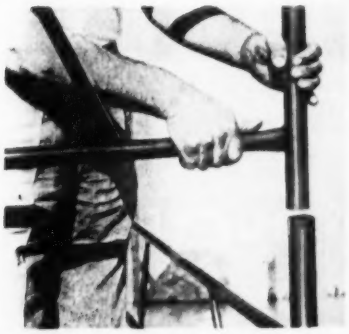
Gradall, with its five arm-action movements, is ideally suited for work that often proves too difficult for ordinary excavating machinery. Contact your nearest Gradall Distributor for an obligation-free demonstration.

Gradall®
DIVISION OF WARNER & SWASEY Cleveland
® Reg. U.S. Pat. Off.
PRECISION MACHINERY SINCE 1880

Distributors in over 75 principal cities in the United States and Canada

PROVEN BY 11 MILLION HOURS OF DEPENDABLE FIELD OPERATION

a wide range of diesel fuels to be utilized. The camshaft on the D353 is mounted high in the block to permit the use of a short, rigid valve train that produces a more accurate valve motion. A full line of matched attachments, including air, electric, or gasoline starting systems; various bases, controls and governors, cooling systems and mufflers, is available. **—Caterpillar Tractor Co., Peoria, Ill.**



SIMPLIFIED SHORING—A new shoring system that uses no nuts, bolts, or X-bracing has been developed by the Brainard Steel Div. of Sharon Steel Corp. Shoring consists of just three basic parts; a tubular steel frame, a ledger carrier, and an adjustable screw jack. The ledger carriers allow the entire load to be carried by leg members. Leg members are designed so that one member can be easily slipped into the notched sleeves of another. With the proper frames, towers can be erected in 1-ft increments and adjustments can be made with the screw jacks inserted into the frames.**—Brainard Steel Div., Sharon Steel Corp., Warren, O.**

NO FIRE HAZARDS—The Monatco heater-planer, a machine for reconditioning asphalt highways and runways, has been completely redesigned. Called the M-2, the new model has the main drive engine, primary transmission, and steering system over the front axle and away from the heat zone. The operator, fuel tanks, and final drive are well to the rear of the

ELIMINATES SEPARATE COMPRESSORS AND WAGON DRILLS. Pneumatractor Rotadrill is a complete, self-contained, 125 cfm air compressor and self-powered drill rig which drives anywhere and sets up in minutes. Drills a 4¼" hole to a depth of 500 feet with 10,000 pounds down pressure. Rotadrill operates efficiently at as little as 15 psi. Yet pressure can be instantly increased for dewatering or breaking out blockages.

PENNSYLVANIA DRILLING CONTRACTOR

Cuts 18 hours from drilling time

It actually happened. In rock-ledged Pennsylvania soil, a Schramm Rotadrill mounted on Pneumatractor made hole in six hours that took 24 with a conventional rig. This is a matter of record—and so is the fact that, in the hard limestone areas of Michigan, Rotadrill increased penetration rates 55% to 66%.

Rotary drilling with compressed air is one reason for Rotadrill's cost-cutting speed. Because compressed air keeps the hole clean, the bit works constantly on new rock, instead of regrinding chips. Fast set-up is another time-saver; simply raise the mast, level the rig and attach bit—all in a matter of minutes. Finally, Rotadrill makes it easy for *one man* to add or remove drill pipe without trouble or delay.

Pneumatractor Rotadrill is a *complete* drilling unit. There's no expensive, cumbersome superstructure to erect and dismantle. Also, Pneumatractor Rotadrill is *self-propelled*—travels anywhere under its own power and doubles as a tractor and air compressor when not drilling. Compactness and simplicity of the rig keep maintenance costs at rock bottom.

Full details of design, construction and advantages of Pneumatractor Rotadrill are yours for the asking. Write for your free copy of Catalog PR-56.

BIG SAVINGS IN ADDING OR REMOVING PIPE Drill controls are mounted in one bank near base of mast for easy, one-man operation. Fast vertical action of rotative head serves as pipe hoist for pulling pipe string. Separate valves control each outrigger, forward and reverse rotation motor, slow down-feed, rapid down-feed and breakout motor.

MAST LOWERS FOR TRAVELING. Heavy welded structural steel mast is lowered for traveling between jobs. Schramm Rotadrill is also available truck mounted. Either way, Rotadrill is the most maneuverable of drill rigs—goes where bigger rigs can't.

Schramm, Inc.

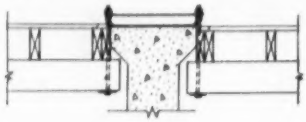
MANUFACTURERS OF AIR COMPRESSORS

604 North Garfield Ave. • West Chester, Pa.

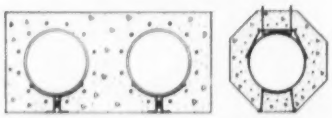
Pre-stressed

Tully & Di Napoli, contractors

Long, pre-stressed concrete girders support the deck of this bridge at Idlewild Airport, New York, designed by the Port Authority. Deck was engineered by Precrete, Inc. Richmond Free-Fit Offset Hanger Frame-Tys, easily adjustable for various slab heights and haunch conditions, were used to support the forms.

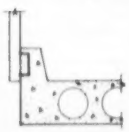


A few Richmond pre-stressing items



Chairs for support and hold-down of cardboard tubing in pre-stressed beams and piles.

Spacers for spirals of pre-stressed piles.



Inserts for railing-in pre-stressed slab bridges.

The increasing use of pre-stressed concrete presents numerous problems to contractors. Richmond's Technical Division is ready to assist you. If you have a problem, write to RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N.Y. or 315 South Fourth St., St. Joseph, Mo.

EQUIPMENT NEWS . . . continued

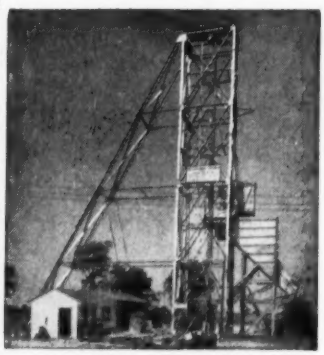
heat zone. All parts in the heat zone are water-cooled, and two automatic fuel cut-offs provide added insurance against fire. The frame of the machine has been opened up to increase visibility and accessibility to major components. The model M-2 is powered by a 90-hp Continental engine. The machine has 15 forward speeds, ranging from 8 fpm to 25 mph, and three reverse speeds. The turning radius has been shortened to 21 ft. The machine retains the patented Monatco burner that delivers a uniform temperature of 2,000 deg, F.,— **Monatco Mfg. Corp., 1401 Woodland, Kansas City, Mo.**

VERSATILE CONVEYOR — A newly designed trough permits a simple conversion of a new building conveyor from a belt to a chain-and-flight type so that the conveyor can handle a wide range of building materials. The conveyor has a solid trough that supports the chain-and-flight rigging, and the same trough also acts as a support for the belt so that no pockets can form while it is in operation. When the belt is used, the head and tail pulleys are connected with a roller chain. In effect, the top pulley carries most of the load because the weight of the load increases traction on the top pulley. This feature is said to prolong belt life. The conveyor is available in 24, 32, or 40-ft lengths. Maximum angle of elevation is 45 deg, and height of discharge is adjustable through a worm-type elevating winch. Flight travel is rated at 120 fpm, and as a belt conveyor the unit moves ½ yd of concrete per min with belt travel rated at 240 fpm. The conveyor comes with swivel wheels for parallel or circular movement. — **Morgen Mfg. Co., Yankton, S.D.**

continued on page 219

There's Something NEW Coming From BUCYRUS ERIE NEXT MONTH!

438E57e



SAFE—DEPENDABLE

MAYO ALL-STEEL HEADFRAMES

Because conditions vary so greatly from one mine or tunnel job to another, a careful analysis of your operation should be made before attempting the design or construction of a headframe. Our twenty-five years of experience on important installations in America, Europe and South America is at your disposal.

Write for Bulletin No. 22-A or send details.

Steel Forms • Headframes • Muck Bins
Shields • Air Locks • Locomotives
Mine Cars • Grouters

MAYO

TUNNEL AND MINE EQUIPMENT

LANCASTER, PENNA.

"Unexpected equipment problems?

We solve them by RCA 2-Way Radio!"

Says **Clifford Worsham,** *Worsham Bros., Miss.*

Clifford Worsham, one of the three Worsham brothers who started the big highway construction business in Corinth, Miss., in 1945, finds their RCA 2-Way Radio system a great help in handling unexpected equipment problems. Here he checks a blueprint while talking over heavy equipment requirements with a project superintendent who is two hours away by highway travel. Another brother, Frank Worsham, writes: "The system is definitely saving us money. It's wonderful for eliminating delays in getting heavy road building equipment from one job to another, expediting trouble-shooting, speeding help in emergencies. We chose RCA 2-Way Radio because we know the RCA reputation for quality."

Worsham Bros.' highway construction operations are far-flung with as many as a half-dozen projects going at the same time. The RCA Carfone "Fifty" System includes 12 mobile units installed on one low-boy trailer, two cars, eight pick-up trucks and one heavy truck. Thanks to RCA 2-Way Radio, all of the activities now are at the fingertips and ears of managing personnel in the Corinth, Miss. Office and Maintenance Shop.

Shop mechanic with pick-up truck stays close to office and project, ready to handle any emergency by means of 2-Way Radio.

Job superintendent confers on progress, checking with another brother, Leroy Worsham, many miles away.

Mail coupon for information

RCA

Tmk(s) ®

RADIO CORPORATION of AMERICA

COMMUNICATIONS EQUIPMENT

CAMDEN, N.J.

RADIO CORPORATION OF AMERICA
COMMUNICATIONS PRODUCTS
DEPT. Y-203, BUILDING 15-1, CAMDEN, N.J.
In Canada: RCA VICTOR Company Limited

☐ Please send me FREE literature on the use of RCA 2-Way Radio in the construction business.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

☐ Have RCA Communications Specialist make a FREE RADIO SURVEY of our business.

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Engineering design and performance characteristics, necessary to insure dependable load bearing ability, are inherent in every Laclede open web Steel Joist because they're manufactured under the rigid Quality Verification Program of the Steel Joist Institute.

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SJI APPROVAL is your assurance of uniformly high quality... in every Laclede Joist you install ... a real contributing factor to the over-all success of your construction work.

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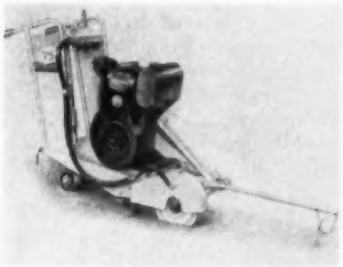
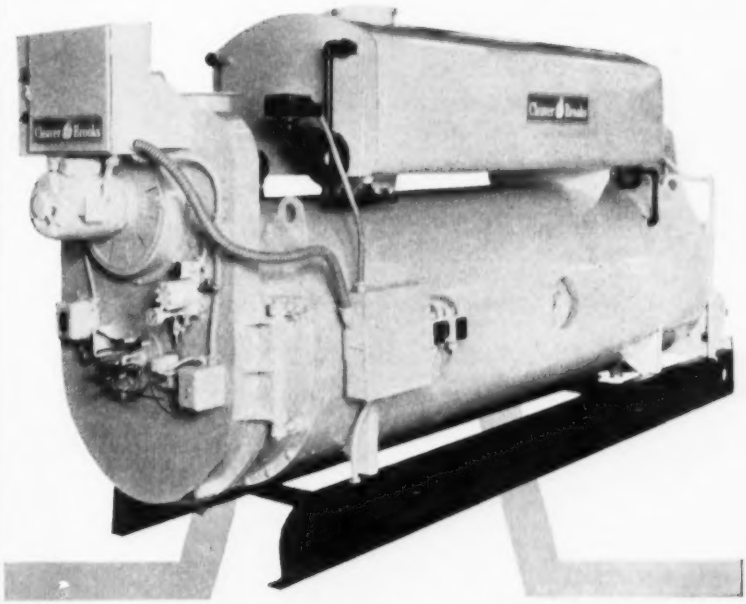


NEW TARGETS—Two new low-priced Target concrete saws, in the 7½ and 18-hp class, have been introduced by the Robert G. Evans Co. The model 75, equipped with a 7½-hp Wisconsin air cooled engine, is a lightweight unit that can be lowered into basements, carried through doorways, and maneuvered around machinery or other obstructions. The 18-hp model 180 is designed to handle both patch jobs and production work. Both models are equipped with the Target lock-type screw feed that provides fast and accurate lowering and raising of the blade. Four solid wheels hold the blade square on the cutting line. Dual blade shafts permit cutting from either side. Three drive belts transmit power from engine to blade shaft. Standard blade guards accommodate 14-in. blades.—**Robert G. Evans Co., 6024 Troost Ave., Kansas City, 10, Mo.**

LIQUID LOCK WASHER—A new liquid plastic sealant called Loctite is designed to cut equipment downtime caused by loose nuts and bolts. The sealant sets up nuts and bolts securely so that no amount of vibration will shake them loose, yet they can be re-

NEW **Forced circulation Peak-Temp oil heater**



Speeds heating of asphalt

Forced circulation of heat transfer oils assures uniform heat distribution . . . improved heat transfer, without "hot spots" or coking. Built-in impeller circulates heat transfer oil at 8 ft. per second, maintains constant oil flow across the furnace and tubes.

Other design advantages:

- **Heat transfer oil lasts indefinitely because hot oil is in minimum contact with air.**
- **No pressure or water problems. Operates at atmospheric pressure; heats and circulates efficient heat transfer oils at temperatures up to 450° F.**
- **Automatic in operation, fully protected with safety controls; quiet, smokeless.**

Cash in on its versatility. Use the new Peak-Temp oil heater for high temperatures, low pressure heating at asphalt land or marine terminals, pre-stressed concrete plants . . . wherever trouble-free controlled heating or curing of materials is required. For complete details write Cleaver-Brooks Company, Heater Sales, 399 E. Keefe Ave., Milwaukee 12, Wisconsin , Dept. L.

Cleaver Brooks

BUILDERS OF EQUIPMENT FOR THE GENERATION AND UTILIZATION OF HEAT

SELF-CONTAINED BOILERS—15 to 600 hp. Oil, gas and combination fired.

PORTABLE STEAMERS—50 to 125 hp. High capacity, multi-duty.

PEAK-TEMP OIL HEATERS—Heat to 450 F. at low pressure.

PORTABLE PUMPING BOOSTERS—Heat and pump bituminous materials.

This Jaeger 2PN pumps 10,200 gph through a 2" suction line — all the water a 2" hose can handle. **With 2½" hose, it pumps 14,400 gph.**

Big New Capacities in Jaeger Pumps

Tests of latest model Jaeger "Sure Prime" centrifugals, reproducing actual job conditions, establish *new high capacities and performance never before guaranteed* to users. For example, a light Model 3XP now pumps 19,500 gph at 10′ static suction lift, the Jaeger 6P pump now has an actual performance exceeding 100,000 gph. Base your pump buying on latest information. Sizes 1½" to 10". *See your Jaeger distributor or write for catalog.*

THE JAEGER MACHINE CO., 800 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • MIXERS • PAVING SPREADERS, FINISHERS

NO WEIGHT LIFTING!

Only 1/5 of load is carried by the barrow man

Why be a weight lifter when Sterlings are available to carry the brunt of the load? The perfectly balanced construction of Sterling Wheelbarrows permits 80% of the load to be carried on the wheel . . . only 20% is carried by the barrow man. And smooth-running, anti-friction bearings make the load seem even lighter. The saving in muscle power increases job efficiency. Crews work faster, make more trips per day. Actually, you'll find Sterlings cost less per year.

Write for catalog.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

moved with ordinary tools. A kit of Loctite sealant has been designed for use in maintenance and service repair work. The kit contains five plastic squeeze bottles of sealant that can be applied from the bottle to the assembled bolt or nut. Because it is a thin liquid it wicks into the places between the threads so that equipment can be made vibration-proof without disassembly. A series of grades of different strengths enables the user to choose the proper locking torque for his particular application. For cadmium or zinc plated parts a special activator is provided. Directions are printed on each kit.—**American Sealants Co., 103 Woodbine St., Hartford 6, Conn.**

FLASHING LAMP—The Hertvy Co. has introduced a kerosene lamp that delivers 50 to 70 attention-attacting flashers per min. Said to be the only flashing kerosene lamp, the unit burns for 50 hr on one 8-oz filling of kerosene. It stands 16 in. high and weighs slightly under 3 lb. The lamp is protected against damage by a sturdy red metal cover. The light shines through a white glass window on one side of the cover, and a red magnifying glass window on the opposite side intensifies the flashing signal. The lamp retails at $7.95.—**The Hertvy Co., Inc., Rego Park 74, N.Y.**

continued on page 223

Our paver tipped and crashed

...but we were out from under in more ways than one

(Based on Company File #61474)

It was a job we'd done often—loading our paver for transport. But this time the ground was wet and uneven. When the paver was halfway loaded, the lowboy slipped out from underneath. Fortunately, nobody was hurt. But it would have cost us $850 in repair bills if it hadn't been for our Hartford Contractors' Equipment Policy.

* * *

Suppose that paver had been *yours*. Would you have had to dig down for the repair money?

You wouldn't have had to—with the protection of a Hartford Contractors' Equipment Policy.

Our policy covers your equipment on the job . . . in transit . . . in temporary storage. It protects you against losses by overturn, fire, theft, explosion, collapse of bridges—against losses by landslide, collision and many other hazards.

Don't take chances. Make sure you'll have cash to pay for repairs or replacement of your equipment. Call your Hartford Fire Insurance Company Agent or your insurance broker—*now*.

Year in and year out you'll do well with the

HARTFORD Fire Insurance Company GROUP

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Hartford Fire Insurance Company Group
Hartford 15, Conn. Dept. FM-10

Please send me more information about the advantages of a Hartford Contractors' Equipment Policy.

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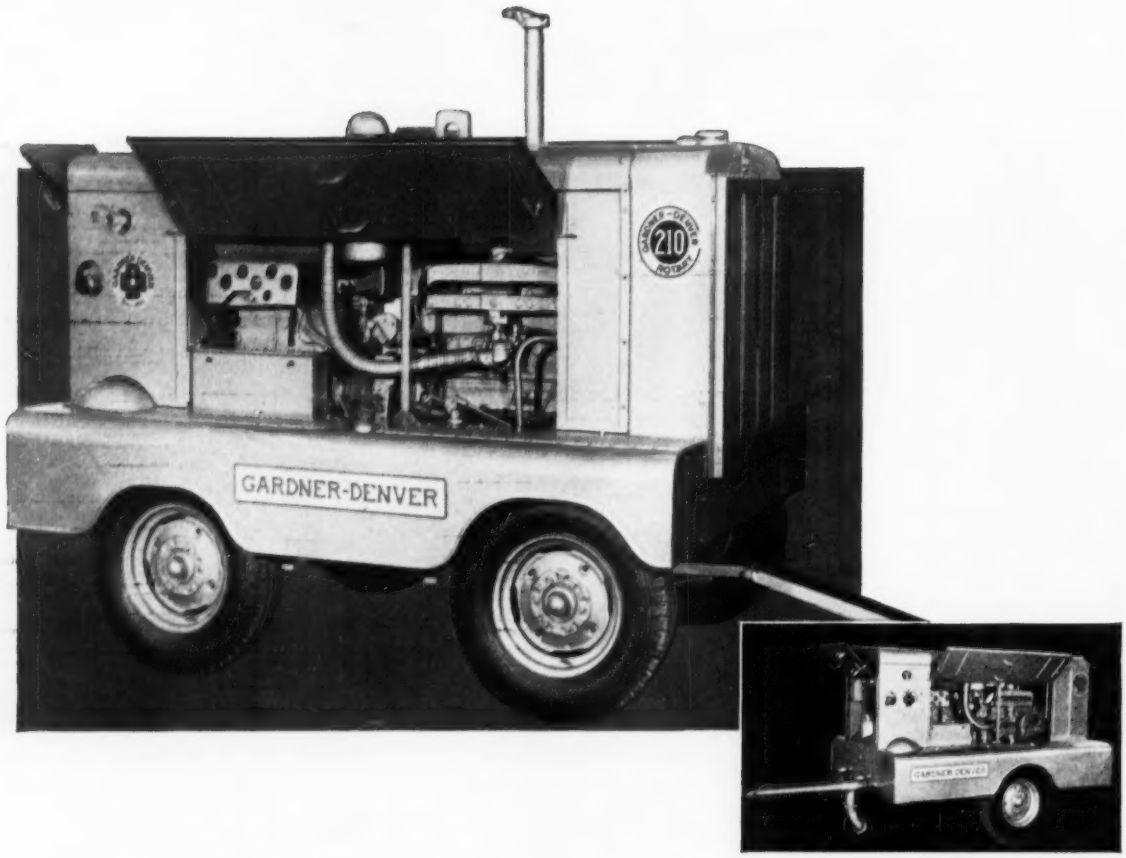


Another smooth performer from Gardner-Denver

NEW MODEL RP210 ROTARY PORTABLE

An *all-new* 210 rotary portable in your choice of:

- Two- and four-wheel chassis and skid mounting
- Gasoline or diesel engine

With these outstanding Gardner-Denver rotary features:

- Clutch for easy cold-weather starting
- Circulating water-oil cooling system
- Fuel-saving "THRIFTMETER"® control
- Easy-to-get-at parts for field inspection and maintenance

WRITE FOR BULLETIN

MODEL RP210 SPECIFICATIONS

Mounting	With Diesel Engine		With Gasoline Engine	
	Two-wheel	Four-wheel	Two-wheel	Four-wheel
Delivery, cfm	210	210	210	210
Operating pressure, psi	100	100	100	100
Length	12′ with drawbar	102″	12′ with drawbar	102″
Width	67¼″	65¼″	67¼″	65¼″
Height	6′3″	6′2″	6′3″	6′2″
Track width	57½″	54″	57½″	54″
Net weight, dry	4800#	5000#	4700#	4900#

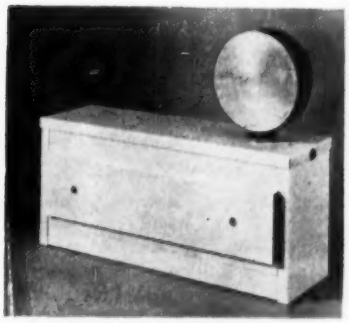
ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

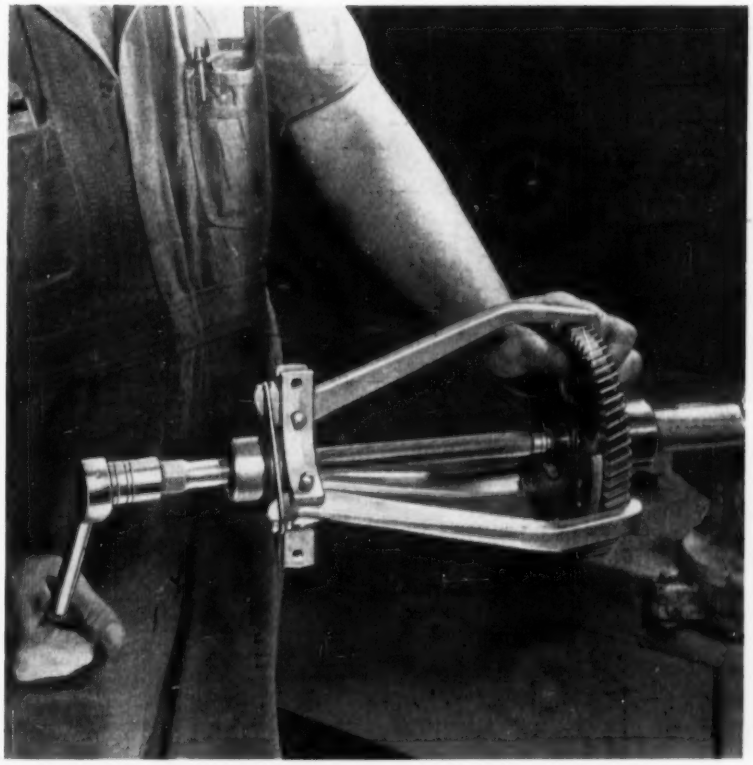
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

10-TON FORK LIFT—Latest addition to the Clarklift line of fork lift trucks is a 10-ton model with dual drive pneumatic tires. Called the CY-200, the machine features 50-50 weight distribution, a planetary drive axle, and 10.00-20 tires for driving through mud and sand and over rough terrain. Hydraulic power steering and power brakes are standard. The unit will travel at more than 20 mph loaded in both forward and reverse and it can climb a 22% grade loaded, according to the manufacturer. A six-cylinder JXD Hercules gasoline engine powers the truck. The frame-mounted, telescopic upright features an automatic tilt-lock valve in the hydraulic system that prevents the upright from drifting when heavy loads are being tiered. The CY-200 is 187 in. long and 96 in. wide. It has an outside turning radius of 176 in. and a 130-in. wheelbase. Underclearance is 9 in. at the upright.—**Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.**



CONTROLLED FLASH — Owl-Lite's new model P-8 flashing warning light features a control that adjusts the rate of flash to suit the light's application. A powerful battery unit furnishes the intense light that can be seen for distances of up to 1 mi. According to the manufacturer, the battery pack has an estimated life expectancy of 9 mo when the

avoid costly damage . . .



REMOVE PARTS SAFELY WITH Snap-on PULLER TOOLS

Snap-on pullers handle a wide range of pulling jobs safely, easily, quickly — protect expensive wheels, gears and other parts from damage — save hours of labor time. *Snap-on* builds a complete line of pullers with pulling pressures ranging from a few pounds to over 50 tons. You handle the toughest pulling jobs without the smashing sledge blows and shocks which can ruin expensive machinery.

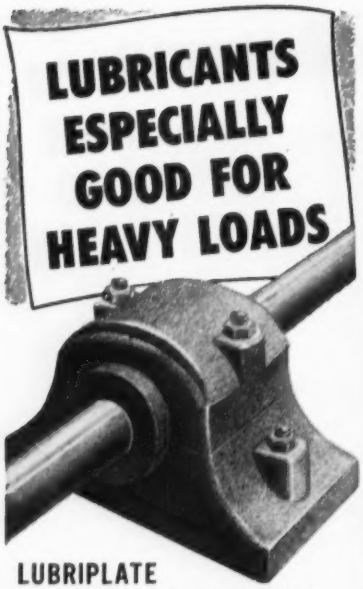
Interchangeable parts, special adapters

Snap-on makes special adapters, reversible jaws and interchangeable parts that permit you to use one basic puller set for many jobs. Jaw-type pullers are designed to lock on to the job — eliminate slipping and binding.

Snap-on offers a complete line of over 4,000 industrial and mechanics tools. Check your *Snap-on* man next time he calls.

SNAP-ON TOOLS CORPORATION

8042-J 28th Avenue • Kenosha, Wisconsin



LUBRIPLATE
Nos. 130-AA, 630-AA and 930-AA
are grease type lubricants especially formulated for use in bearings and on other machine parts subject to heavy loads. Have extremely high film strength, marked adhesiveness and water repellence.

LUBRIPLATE
Nos. 4 and 8
are most satisfactory fluid type lubricants over a wide range of temperatures. Due to their high film strength, they are ideal for use where heavy loads are encountered.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.

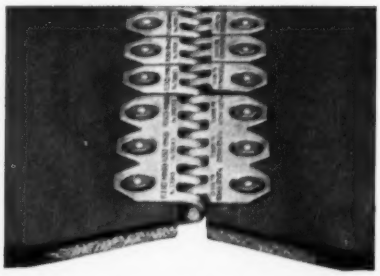
EQUIPMENT NEWS . . . continued

light is set to deliver 100 flashes per min. The light switch and the flash rate control are contained in a sheet metal case that gives protection against weather and tampering. The light can be mounted on wood or metal barricades or on its own warning stand. Weld-nuts are provided on the side plate and on the bottom for mounting.—**Partronics, Inc., Dept. H., 2421 Elmwood Ave., Buffalo 17, N.Y.**

HANDLES MEN—Yale & Towne has developed a personnel platform and boom attachment for its line of industrial lift trucks. The platforms, 24 sq ft in area, are fitted with removable guard rails. The attachment's removable boom, which is fitted with a hook that accommodates a hand hoist or ratchet hoist, has a capacity of 200 lb and it slews through 180 deg. The attachment fits directly onto a standard fork carriage and it can be modified to be picked up on a pair of 48 or 60-in. long forks.—**Yale Materials Handling Div., Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa.**

CONCRETE TESTER—The Ball Penetration Apparatus, a new instrument for determining the consistency of fresh concrete, is now available from Soiltest, Inc. The equipment, which conforms with ASTM specifications, consists of a cylinder with a ball-shaped bottom and a handle weighing 30 lb. A lightweight metal frame guides the handle and serves as a reference for measuring the depth of penetration of the ball. Fresh concrete can be tested either in forms or in a suitable container. No experience is necessary to operate the instrument. An approximate

NEW...



500X
FLEXCO HINGED BELT FASTENERS

for ditching, trenching, grading and other earth moving equipment

★ *Make smoother joints*
★ New Nylon covered cable pin
★ No pin migration
★ Complete packaged joints

Standardize on FLEXCO 500X Fasteners

★ Packaged joints — complete, convenient, no waste.
★ New Power Tools cut application time.
★ Stocked by leading distributors.
★ Field engineers are ready to assist you.

(Fasteners also available in bulk — nylon covered cable pin stock in 100 ft. and 200 ft. rolls.)

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See Your FLEXCO Distributor

FLEXIBLE STEEL LACING CO.
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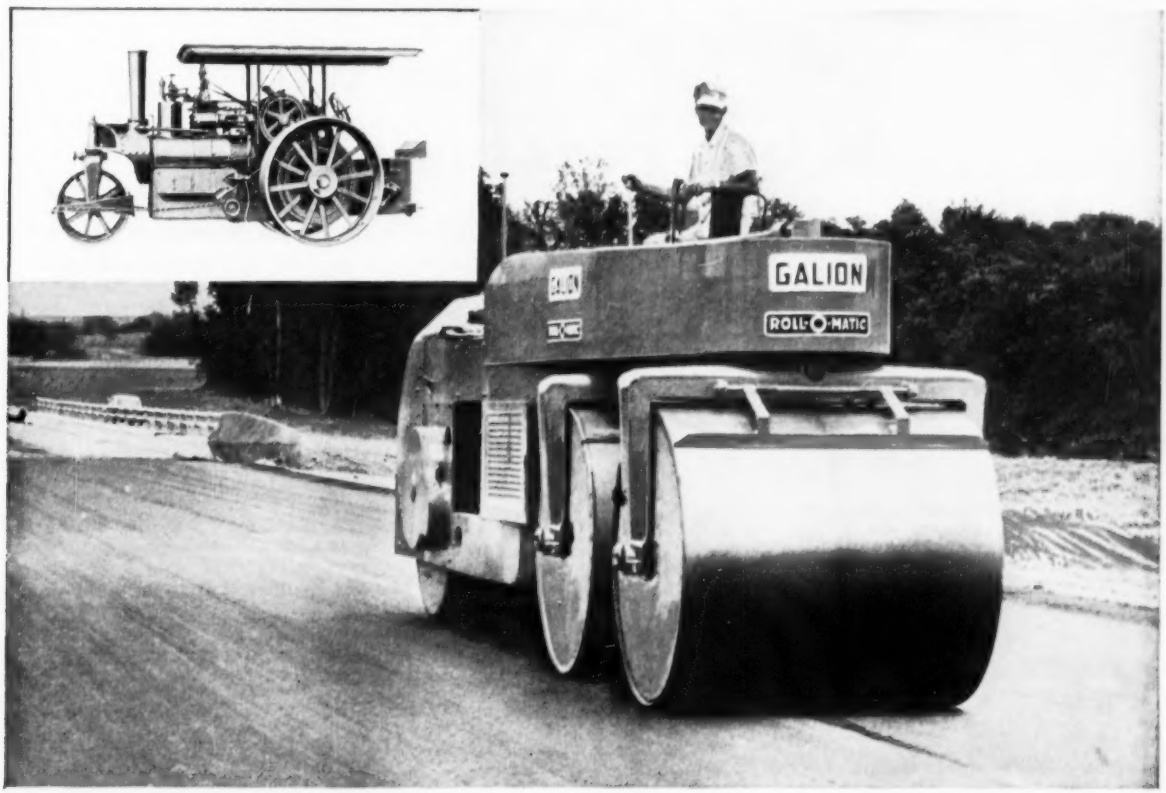
FLEXCO *Hinged*
500X Belt Fasteners

ALLISON salutes GALION's 50 Years of Progress

The Allison Division of General Motors proudly congratulates The Galion Iron Works on a half-century devoted to the design and manufacture of better road-building tools

YESTERDAY—This early Galion "steamroller" was a road-building miracle in its day. Key to its efficiency was the smooth, quick reversing possible with steam power. From this model Galion went on to more modern motor rollers.

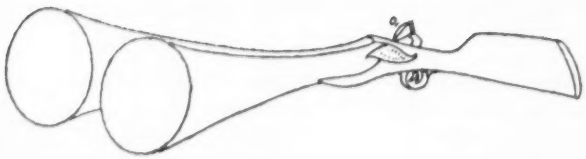
TODAY—Galion's 3-axle tandem Roll-O-Matic is the result of half a century of manufacturing skill. And its modern TORQMATIC DRIVE brings back the smoothness of steam-engine reversing. The Galion Roll-O-Matic is one of the most important tools of today's road-builder.



Through constant research and development Galion has grown from a modest beginning in 1907 to its present position as one of the world's leading manufacturers of road rollers.

Allison is proud to be playing an important role in Galion's latest highway construction equipment —the Galion Roll-O-Matic. Allison TORQMATIC Converters make these streamlined road rollers completely modern, pointing the way toward Galion's continued progress as it begins another 50 years of service to the American road-building industry.

Allison
GM TORQMATIC
TORQMATIC DRIVES



Write for a better way to bag new business

If you're gunning for more business from new construction, Dodge Reports can help improve your aim. They point out your *live* prospects . . . put an end to the hit-or-miss method of finding business. If you would like to see how Dodge Reports can build your business . . . help your profits mount, just read this coupon, and mail it today!

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Yes! I'd like to see how to get more business by knowing in advance who's going to build, what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports, and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area in the 37 Eastern States and the type of construction activity that interests me. Also, that I won't have to wade through mounds of data to find the information I need.

I'm interested in General Building ☐ **House Construction** ☐ **Engineering (Heavy Construction)** ☐

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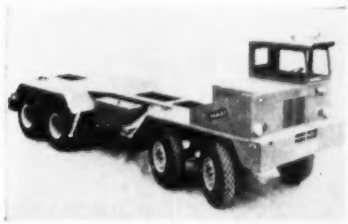
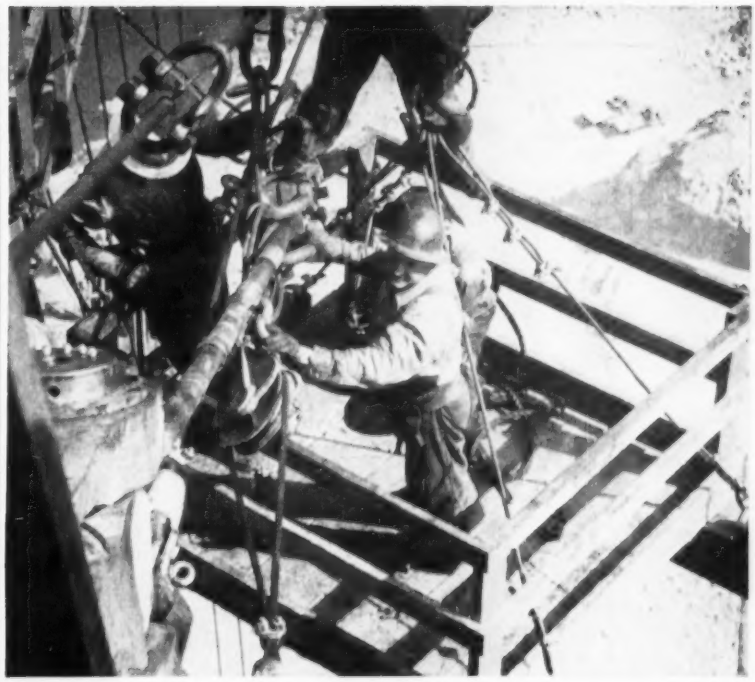
Dodge Reports
For Timed Selling to the Construction Industry

slump measurement can be obtained by doubling the ball reading of the apparatus. Price of the instrument is approximately $50. **—Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.**



NEW CARRIER—A 35-ton truck crane carrier, available with either an 8x4 or 6x4 drive, has been introduced by the Maxi Corp. Power is supplied by either a six-cylinder Waukesha 207-hp gasoline engine or a Cummins diesel. Main and auxiliary transmissions provide a total of 12 forward and three reverse speeds with a top speed of 38.8 mph and a low speed is 1.7 mph. The unit weighs 39,300 lb and the wheelbase from center to center of tandems is 16½ ft. The truck is 28 ft 3 in. long and 10 ft 3 in. wide. Features include a welded alloy steel frame, removable outriggers with slide-type extensions, air assisted clutch, power steering, and a new brake system. Called Maxibrake, it provides for an automatic spring-actuated, mechanical application of brakes when the air supply is depleted through use or other causes.**—Maxi Corp., Los Angeles, Cal.**

RUGGED PTO—Rockford's new power take-off has several new features designed to meet the demands of extremely rough duty. The conventional pilot bearing has been eliminated, and outboard bearing supports and flexible couplings are no long necessary for all applications. The main shaft bearings do not require lubrication more than once a year, and the clutch release bearing is lubricated for life. The main bearings are of the 40,000-hr type and belt loads up to 5,000 lb can be handled on the well supported drive shaft. It is available with double or single-plate, organic or cerametallic-faced gear tooth drive-type clutches.**—Rockford Clutch Div., Borg-Warner Corp., Rockford, Ill.**



WORKERS RELY ON CROSBY CLIPS

THIMBLES INCREASE ROPE LIFE, SAFETY

Unless protected by a thimble, wire rope can be seriously damaged by heavy lifts that crush the strands at the load point. A light thimble can collapse and damage the rope. For positive rope protection and safety, specify Crosby Laughlin heavy plow steel thimbles with the extra heavy steel section design that stands up under maximum loads. Plow Steel Thimbles are available in sizes to fit ¼" to 2¼" wire rope. Stainless Steel Thimbles are offered in selected sizes.

Rigging a cable way 600 feet in the air demands the best fittings available to protect men and materials. This crew is assured of maximum safety because their work platform is secured with genuine Crosby* Clips. This clip, quickly identified by the "Red U-Bolt*" is the number one choice on every job where maximum safety and holding power is essential. Look for the red U-bolt—you'll see it securing wire rope in every industry! And Crosby is the *only clip* available in sizes to fit every rope from ⅛" to 3"! Proved design and quality controlled manufacture—finest steel, drop forged base, galvanized—results in consistently reliable performance.

From one source, Crosby Laughlin Lebus, you get the world's most complete line of fittings: Crosby Clips and "Load Rated" Blocks; Crosby-Laughlin drop forged shackles, hooks, Missing Links*, turnbuckles, thimbles, and other fittings; famous drop forged Lebus Loadbinders and drop forged Snatchblocks! Your Crosby Laughlin Lebus Distributor is your one stop fittings supplier—see him next time you need *any* fittings!

*REGISTERED TRADEMARK

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CROSBY-LAUGHLIN *Division*

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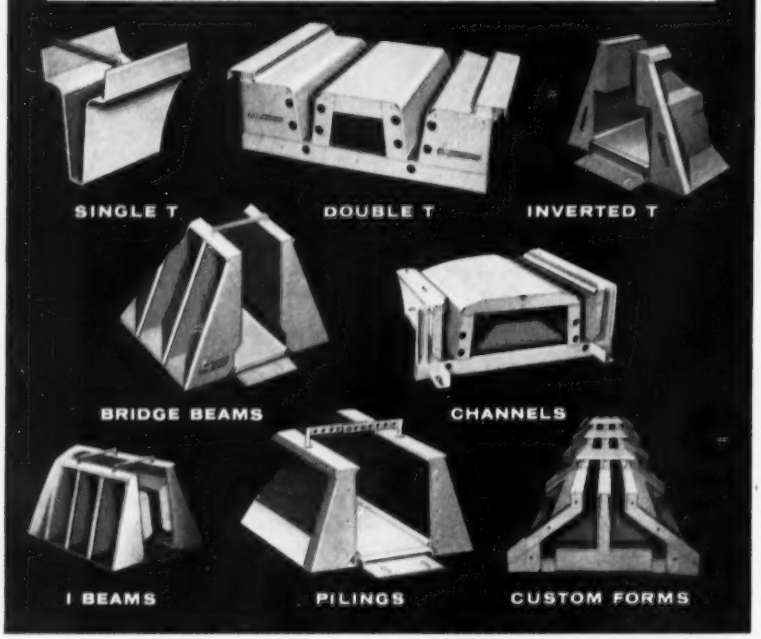
Now!

FORM-CRETE

TRADE MARK

OFFERS THE MOST COMPLETE LINE of CASTING FORMS EVER PRODUCED!



THE FORM-CRETE line of more than 22 basic forms represents the most versatile group of steel forms ever produced for casting prestressed and precast concrete products. Each form has been carefully designed to insure a uniform, smooth edge product. Die-formed product release angles permit easy trouble-free stripping of product. Heavy-gauge steel construction means indefinite form life. What's more, many Form-Crete forms can be quickly adapted to produce a variety of varied finished products. And where special needs call for a custom form, FMC has the know-how and facilities to turn it out quickly and efficiently. That is why we say, call on Form-Crete, rely on Form-Crete for the finest in steel forms delivered on time, when and where you want them.

SEND FOR NEW CATALOG. Just off the press, this new Catalog illustrates all of the many Form-Crete forms now available including the new PCI and AASHO approved Bridge Beams.

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FOOD MACHINERY AND CHEMICAL CORPORATION
LAKELAND, FLORIDA • RIVERSIDE, CALIFORNIA

Please send me a copy of your new Catalog No. 300.

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COMPANY_____

CITY_____ ZONE_____ STATE_____

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

AIR POWER DATA—Le Roi bulletin AT-116B, "I Know Airpower," is a concise story of the use of air as power and the construction and maintenance of air tools. Included in the eight-page bulletin is a rock drilling trouble and remedy chart. — **Sales Promotion Dept., Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.**

VALVE LUBRICATION—A new 16-page catalog gives recommended lubricants for plug valves under 4,000 listed service conditions. Valve accessories and data on lubricating guns is included. —**Homestead Valve Mfg. Co., Coraopolis, Pa.**

EXCAVATOR—Gar Wood Industries, Inc., has published a 24-page catalog on its 75B excavator, which gives details of important parts and assemblies and describes all available attachments. —**Customer Service Dept., Gar Wood Industries, Inc., Wayne, Mich.**

LEE TIRES—A new catalog covers Lee's complete line of truck tires for on and off-the-road use. Included in the 16-p bulletin are facts about job payload performance and information about Lee's construction features. —**Lee Rubber & Tire Corp., Conshohocken, Pa.**

PRESTRESS FORMS—A catalog on its WATCO steel form line for precast and prestressed concrete production has been issued by the Concrete Form Div. of Plant City Welding & Tank Co. The two-color booklet includes specifications and sizes of the many forms manufactured by the company and cites uses for each form. Illustrations show WATCO forms being used in various casting yards. — **Concrete Form Div., Plant City Welding & Tank Co., P.O. Box 1308, Plant City, Fla.**

continued on page 231

Bethlehem Hollow drills rock at site of Priest Rapids Dam on Columbia River. *General Contractor:* Merritt-Chapman & Scott Corporation, New York; *Consulting Engineers:* Harza Engineering Co., Chicago.

HARNESSING THE COLUMBIA RIVER AT PRIEST RAPIDS, WASHINGTON

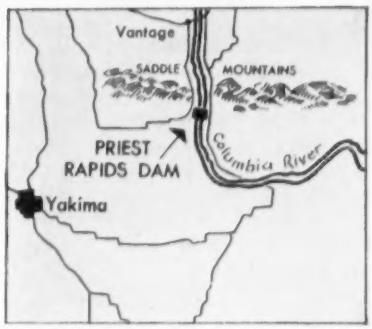
In the picture above, drilling crews are using Bethlehem Hollow Drill Steel in rock removal at the site of Priest Rapids Dam, on the Columbia River, about 24 miles below Vantage, Wash.

The new dam is the first phase of the new Columbia River development, and is being constructed for Grant County Public Utility District. It will be a concrete and earthen structure 8412 ft long, and will have a maximum height of 178 ft. Its eight generators will have a total capacity of 630,000 kw—one of the largest sources of hydroelectric power in the United States.

Bethlehem Hollow Drill Steel is economical in all kinds of rock drilling jobs because it is rolled from fatigue-resistant steel, and has a uniform hole which is centrally located in the bar. Bethlehem Hollow also has a wide quenching range. It is easy steel to heat-treat for the proper balance of toughness and wear-resistance, making possible long-wearing threads and strong shanks.

Bethlehem Hollow is furnished in Carbon and Ultra-Alloy grades in rounds, hexagons and quarter-octagons.

Be sure to specify Bethlehem Hollow for your next rock drilling job.



BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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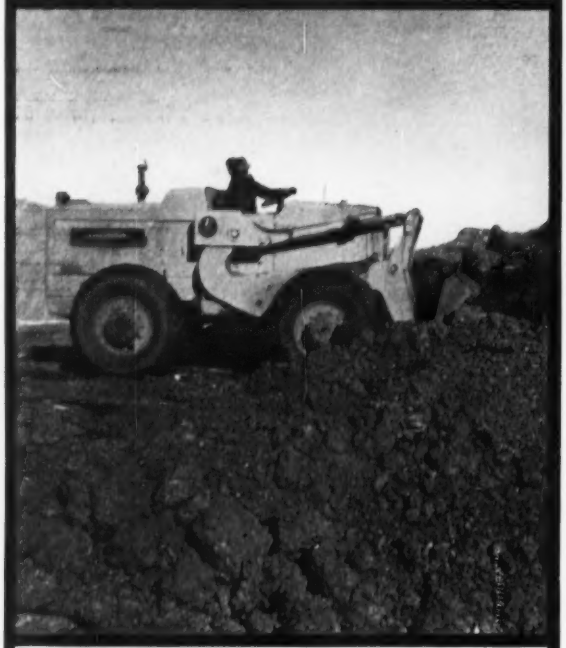
BETHLEHEM HOLLOW DRILL STEEL

Carbon and Ultra-Alloy

BETHLEHEM STEEL

for Earthmoving



"More YARDAGE

is a vital factor for us", says "PAYLOADER" operator Leroy Jimerson of the Inland Construction Co. of Wichita, Kansas. "We've handled as much as 2,000 tons of material in an 11-hour day with our HO 'PAYLOADER'. It's got plenty of power", he says, "handles fine and is comfortable for the operator. We use it for everything — loading, mixing and general work, even pushing stuck trucks."

The exclusive Hough feature of 40° bucket tip-back and powerful pry-out action at *ground level* is your assurance of getting full bucket loads with less spillage and more yardage delivered with "PAYLOADER" tractor-shovels. Other peak yardage operating features "built-into" these 4-wheel-drive units include power-transfer differentials, "no-stop" power shift transmission and torque converter, planetary final drives, power steering and power brakes.

Three sizes are available to fit any job; speeds to 24 mph., bucket capacities to 4 cu. yds., carry capacities to 9,000 lbs. A Distributor will gladly demonstrate *more yardage* "PAYLOADER" features to you! The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.

PAYLOADER®
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THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

123A

for Building

"More FLEXIBILITY

for year-'round construction work is what we wanted and got in our Model HO", says A. Friederick and Sons Company, Rochester, N.Y. building contractors. They report, "We use this 'PAYLOADER' for just about everything — bulldozing, loading, material handling, pipe handling and many other jobs. It has been very satisfactory — easy to operate, plenty of power, excellent maneuverability."

One man on a rubber-tired "PAYLOADER" is a highly mobile "crew" because it can travel fast, under its own power, work on paved or unpaved terrain and handle *many* jobs. For example . . . a fork lift attachment can be quickly interchanged with the standard bucket to handle lumber, logs, pipe or palletized loads. Other quickly interchangeable "PAYLOADER" attachments include crane hook and back hoe. Last, but not least, there is the special patented DROTT "4-in-1" bucket that combines shovel, clamshell, scraper and bulldozer action in a single bucket arrangement.

It will pay you to have your Distributor prove "PAYLOADER" flexibility and performance *on your work!* The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.

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123C

NEW PUBLICATIONS . . .
continued

COMPREHENSIVE CATALOG—A new 28-p general catalog, described as the most comprehensive in its 50-yr history, has been issued by Symons Clamp & Mfg. Co. The catalog offers detailed data on Symons basic line of wood-ply, steel-ply, mag-ply, wide panel, lo-wall, and culvert forms, as well as form hardware form ties and accessories, scaffold brackets, safety shores and column clamps. The firm's engineering and field services are also explained, and photos show jobs in which Symons forms have been used to advantage. — **Symons Clamp & Mfg. Co., 4249 W. Diversey Ave., Chicago 39, Ill.**

RUBBER PRODUCTS — "Acme Rubber Products for Every Construction Job" is the title of a new catalog that describes and illustrates 26 types of Acme hose and four types of conveyor belting. For each type, the booklet lists the product's application, composition, and lengths and sizes available. Also given are tabular listings of diameters, working pressures, weights, and other information.—**Acme Rubber Mfg. Co., Div. of Acme-Hamilton Mfg. Co., Trenton 3, N.J.**

ROAD JOB SHORING—"How to Use Steel Shoring and Scaffolding in Highway Construction" is the title of a new publication issued by the Patent Scaffolding Co., Inc. Illustrated with photos showing typical job applications, the compact, fact-filled booklet details cost-cutting ways of using Patent equipment for road building projects.—**Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N.Y.**

POCKET PRIMER—A new 40-p. booklet called "Your Pocket Guide to Successful Forming" has been published by Gates & Sons., Inc. The new booklet shows economical ways to build forms that will save time, money, and materials while providing a quality concrete. The booklet gives practical information on the use of sheathing as well as plywood panels for forming and it includes rate-of-pour tables and other information. — **Gates & Sons, Inc., 80 S. Galapago, Denver 23, Colo.**

continued on next page

TRANSFER LIQUIDS *Faster Easier Safer* with **Bennett Big G Hand Pump**

Double-action Big G Transfer Pump provides the safest, easiest and most convenient way to transfer liquids. Pumps up to 20 gallons a minute and lifts up to 20 feet.

Every stroke is a pumping stroke. Automotive-type piston design eliminates troubles common in cup-leather and diaphragm type pumps.

Available in a variety of models to fit your pumping needs.

JOHN WOOD

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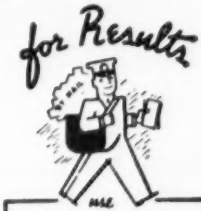
• Arouses Interest • Creates Preference

DIRECT MAIL
• Gets Personal Attention • Triggers Action

After your prospect has been convinced by Display Advertising, he still must act. A personalized mailing piece, is a powerful action-getter. Send for our Industrial Direct Mail Catalogue, 150 lists available.



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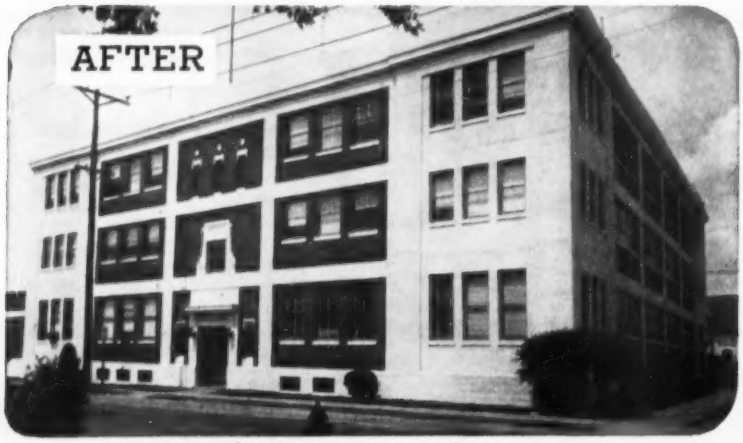
THORITE and THOROSEAL furnish office building with *That New Look* plus all-weather protection.

BEFORE

Severe weathering had deteriorated sections of cornices, sills, lintels and ledges. Cracks permitted water penetration, causing damage to interior of building.

All cracks were opened with hammer and chisel, spalled areas cut and cleaned, then patched with THORITE, followed by two brush coat applications of Pearl Gray THOROSEAL.

Brick was left uncoated to develop pleasing contrast. See Circulars No. 16 and 20.



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NEW PUBLICATIONS . . .
continued

TRACTOR SHOVELS—The Yale & Towne Mfg. Co. has published 6-p. brochures on two of its recently acquired Trojan tractor shovel models—the Trojan 154, which has a 2-yd capacity, and the model 104, which has a 1¼-yd capacity. The brochures include drawings and descriptions of such Trojan features as low load carrying position, independent bucket action, and reverse curve safety arms that give 360-deg vision when loading and which remain below the level of the operator even when the bucket is fully raised. Specifications are included, as well as a list of standard and optional equipment.—**The Yale & Towne Mfg. Co., Contractors Machinery Div., Batavia, N.Y.**

PIONEER CONVEYORS — The theme of Pioneer's new 36-p conveyor catalog is "built to keep your materials moving." It is compact catalog that includes a visual indexing system that makes it easy to use. The catalog describes the two lines of conveyors manufactured by Pioneer. Job-engineered conveyors are for special applications where length, capacity or horsepower requirements cannot be met with Pioneer's pre-engineered conveyors. A section is devoted to conveyor accessories such as drive types (Pioneer offers three), head and tail sections, additional supports, rock ladders, troughing and support idlers, and belt take-ups.—**Pioneer Engineering, 3200 Como Ave., Minneapolis, Minn.**

ELECTRODE GUIDE—A new 70-p "Electrode Pocket Guide" published by Air Reduction describes each Airco electrode, its color code, its application, and the best procedure for its use in welding. A feature of the booklet is an electrode consumption calculator, that, in tabular form, provides data for calculating consumption per lineal foot when welding various types of joints. Other sections describe methods of electrode selection, industrial and government specifications for filler metals, and practical methods of testing deposited weld metal.—**Air Reduction Sales Co., 150 E. 42nd St., New York 17, N.Y.**

Super-Triplex saves contractor $1.84 per cubic yard in compacting backfill

Time after time, it's been proven that when an Ingersoll-Rand Super-Triplex Tamper moves in on the job, work gets done better and at lower cost . . .

On a midwestern building project, with soil composed of sandy gravel with 15% to 20% clay content, the contractor could not maintain a 95% Proctor Density on a 4" lift. His problem: compacting was costing $2.67 per cubic yard, and results were unsatisfactory.

A demonstration of the powerful Ingersoll-Rand GT44 Super-Triplex Tamper, showed conclusively that it could compact a 12" lift to standard density —doing it quicker and at a cost of only $.83 per cubic yard.

Triplex Tampers Assure Quality Work

Construction men, who know how important it is to have backfill with no subsequent settlement, have been quick to select the I-R Triplex Tamper.

Other Triplex Tamper Features:

Faster Operation: One man with less effort does the work of 5 men with single tampers.

Greater Safety: Wheel barrow type handles hold butts away from operator's feet.

Higher Lifts: 20% higher lifts of solidly tamped ground.

Uniform Work: Wide pattern assures systematic coverage.

See for yourself how an I-R Triplex Tamper can speed your backfilling operations and at less cost. Call your Ingersoll-Rand AIRengineer, or write today for descriptive literature.

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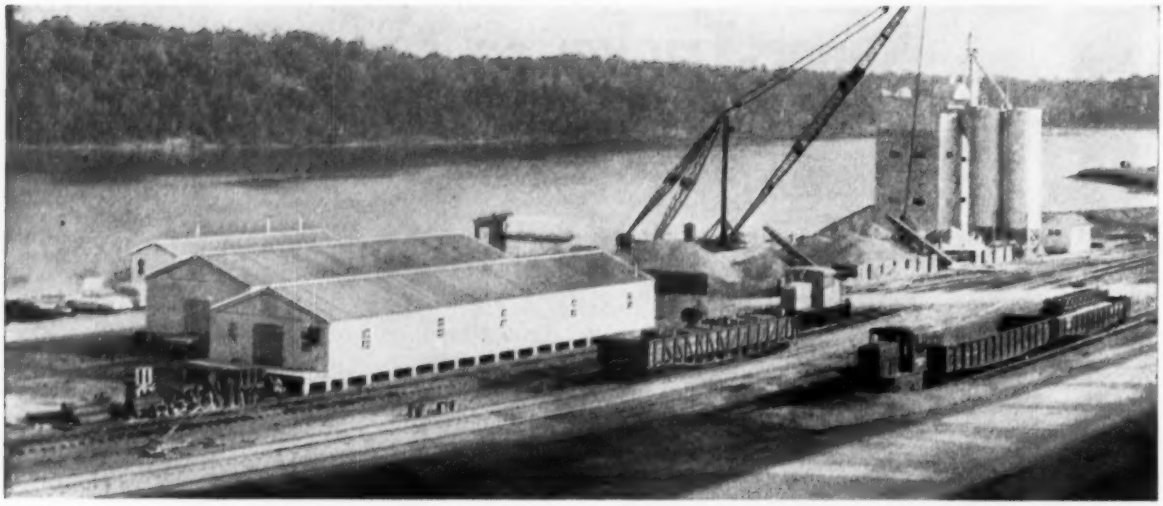

Of the 88 Armco Steel Buildings at the new Allen Steam Plant of the Duke Power Company, nearly half of them are at their third site. An equal number are at their second location.

These Armco Steel Buildings are at Their **Third Power Plant Construction Site**

Erected three times at different sites . . . and ready to go again!

That's the record of 37 Armco Steel Buildings used by the Duke Power Company to house workers and machines during construction projects at their various power plants in the Carolinas.

Formerly, wooden buildings were erected at construction sites and later abandoned because relocation was too costly. Then, in 1950, the Duke Power Company erected 37 Armco Buildings—bunkhouses, family-type houses, foremen's offices and tool rooms—during expansion of their Buck Steam Plant. Upon completion of work here, the buildings were dismantled and re-erected for construction crews at the Dan River Plant site.

Recently, ground was broken for the new Allen Steam Plant. The Armco Buildings, already used at two previous construction sites, were again dismantled and re-erected—*their third location.*

* * *

Armco Steel Buildings are available in more than 5,000 sizes, in clear-span widths from 5'-4" to 100'. Offering high quality at lower cost, they are widely used by contractors, engineers, industries, municipalities and highway departments. Armco Drainage & Metal Products, Inc., 5647 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

These 16- by 60-foot Armco Buildings in the foreground have been dismantled, moved and re-erected twice. First time they were moved 90 miles; the second time it was 140 miles.

One of the many Armco Steel Buildings used by the Duke Power Company as a family-type house. The 24- by 32-foot structure is at its third location.

For more information and prices on Armco Steel Buildings, Call Western Union and ask for Operator 25

Armco Construction Products

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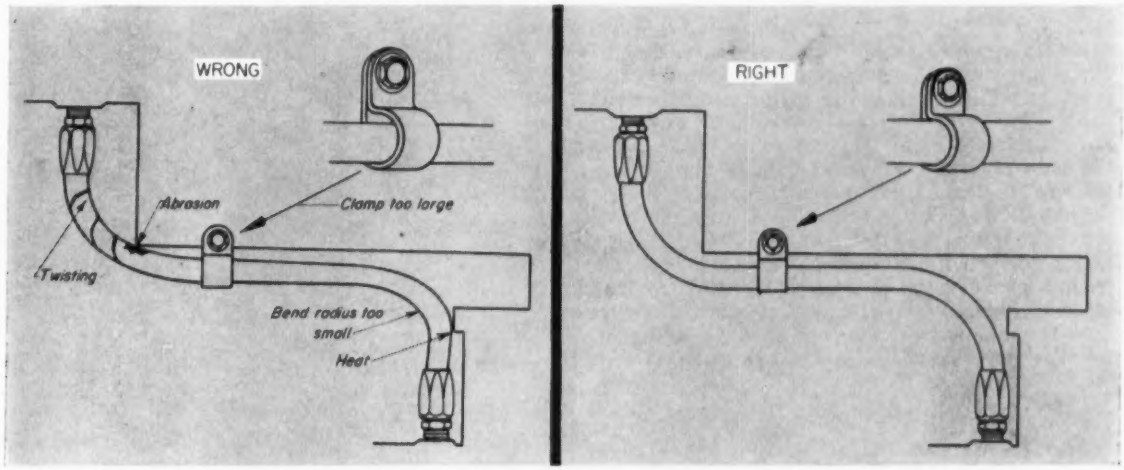
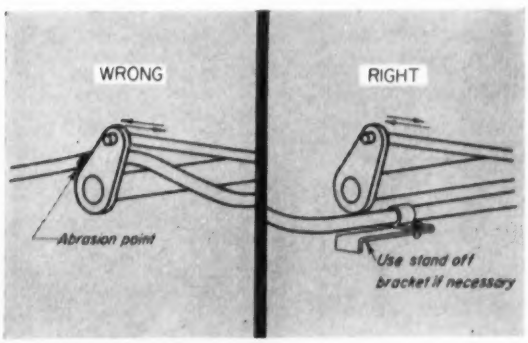
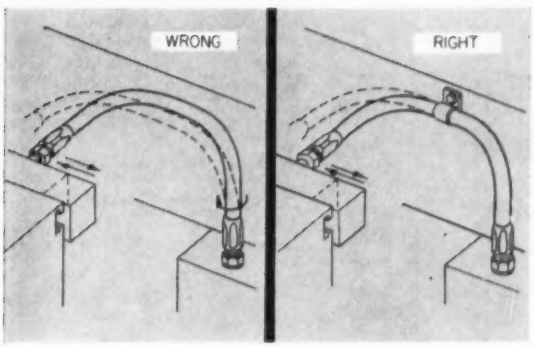


Proper Routing Prolongs Hose Life

Improper routing of the flexible hose assembly on the left (above) subjects it to five danger points that will shorten its life. The hose on the right appears to be routed in a similar manner, yet all five danger spots have been avoided. It will operate effectively long after the other line has failed. Correct routing is often a matter of just a few inches. This article, compiled from information supplied by the Aeroquip Corp., illustrates causes of hose failure and ways to avoid them.



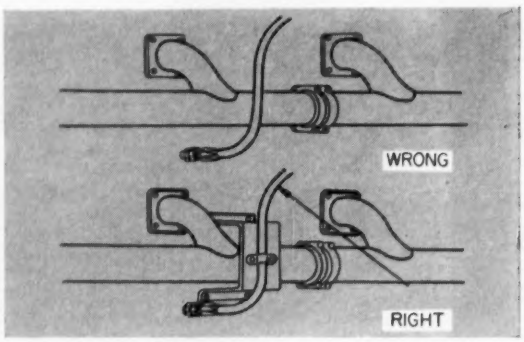
ABRASION—Flexible hose consists of a tough outer covering over one or more layers of either wire or fabric reinforcement that protects the inner tube. Constant contact with sharp edges or moving parts (left) will wear through the outer covering, weaken the reinforcement, and eventually destroy the hose. Clamps will eliminate abrasive points, but only if they are properly used. They must fit snugly and grip the hose around its entire circumference. Clamps should support hose from the bottom, not carry it from the top. For lines up to 1 in. use simple metal clamps with bonded rubber covers; for larger sizes use a heavy strap iron clamp with smooth, rounded edges.



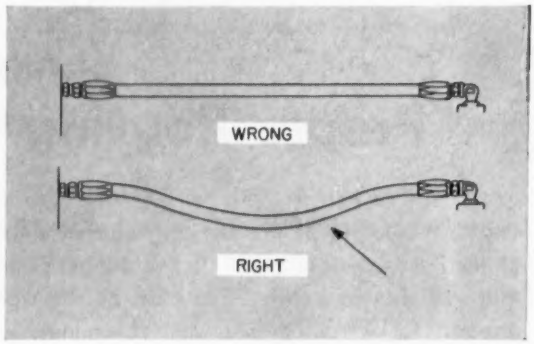
FLEXING—Twisted lines and points of abrasion are inherent dangers for hose lines that are subjected to constant flexing. As a general rule, bend the hose so that it stays in the same plane as the motion of the boss to which it is connected. Make sure that the hose avoids points of abrasion during its entire flexing cycle. Flexing hose that bends in two planes (left) presents special problems. The hose will tend to twist because at least one bend will be in the wrong plane. To partially correct this condition, clamp the hose at the point where the hose changes planes (see drawing). This has the effect of dividing the hose into two assemblies.

continued on next page

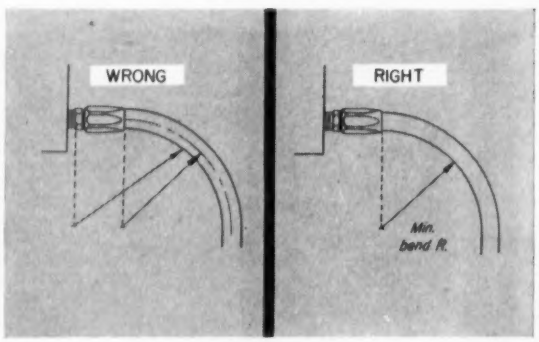
EXTERNAL HEAT— Flexible hose assemblies that are exposed to unusually high ambient (external) temperature will have their life span drastically shortened. Whenever possible route hose assemblies away from hot manifolds and other places where the hose might be subjected to high temperatures for any length of time. For high pressure lines or for hose that is constantly flexing be sure that these actions will not cause them to touch high temperature points. If it is impossible to route hose away from heat, install a protective sleeve or a baffle plate to protect it. Make sure that baffles or sleeves used for this purpose are poor heat conductors and see that they fit properly to avoid abrasion.



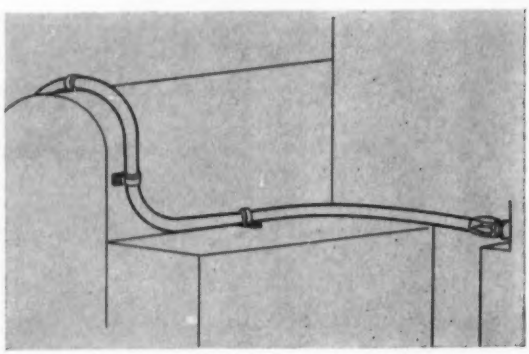
PRESSURE PROBLEMS— Hose assemblies that are subjected to high surge pressures require special attention because pressurized hose will change in length from as much as +2% to −4% (the higher the pressure the greater the change in length). Unless hose is routed properly to compensate for this change, undue strain is transmitted to the fittings. Strong clamps are usually needed for routing high pressure lines, but because clamps are potential abrasion points, keep the number used to a minimum. If only one clamp is needed, place it in the center of the line. Avoid clamping on a bend and do not clamp high and low pressure lines together because they will not expand at the same rate.



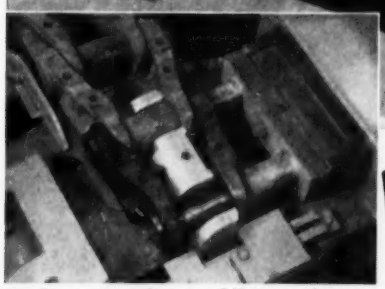
BENDING HOSE— Usually it is impossible to tell from the appearance of the hose whether or not the recommended bend radius has been exceeded. It depends on the reinforcement in the hose, and this is hidden from view. Hose manufacturers publish the recommended bend radii allowable for the various types of hose. To determine whether an assembly is meeting the manufacturer's recommendations, measure the bend radius from the inside of the bend as illustrated. Do not include the fitting in this measurement. Remember a hose that is constantly flexing, or one that is under high pressure, requires a larger bend radius than a hose used in a fixed application.



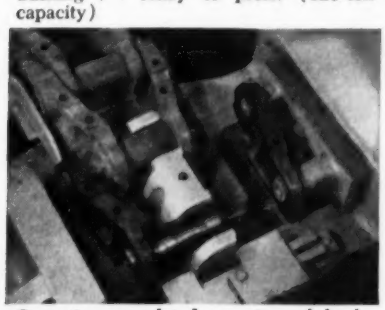
APPEARANCE— There is a direct relationship between the appearance of a hose assembly and the way it will function. Hose that follows the contour of the equipment on which it is mounted will generally perform for longer periods than assemblies that are allowed to roam all over the machinery. Route lines together when possible (but do not clamp high and low pressure lines together). Use hose assemblies that fit properly. Excessive slack invites unnecessary flexing that exposes hose to the hazards of heat and abrasion. Use elbow adapters or elbow hose fittings when necessary to provide direct routing. These not only improve appearance but also shorten assembly time.



HERE IT IS!



Link positioned in saddle . . forcing head (right) aligned against pin and bushing . . ready to press. (125-ton capacity)



Operation completed . . pin and bushing removed from one sidelink, quickly, safely and easily. Forcing head retracted.

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CUTS TRACK MAINTENANCE TIME 50%!

By *pushing pin and bushing at the same time* and utilizing a new, *modern 2" work-stroke,* the new OTC "Trackmaster" gives an amazing performance! . . on *any* size track! FAST! — twice as fast! . . with growsers *off or on* (2 bolts removed)! SAFE! — no danger to the operator or to the press itself! . . no damage to parts! . . eliminates broaching of sidelinks . . EASY-TO-OPERATE! — just 3 simple controls! . . a one-man operation! Imagine disassembling and assembling a long-used TD-24 track (growsers on, 2 bolts removed) in just 1 hr. 55 min.! We've done it with a "Trackmaster!"

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I have a track press now ☐ YES ☐ NO

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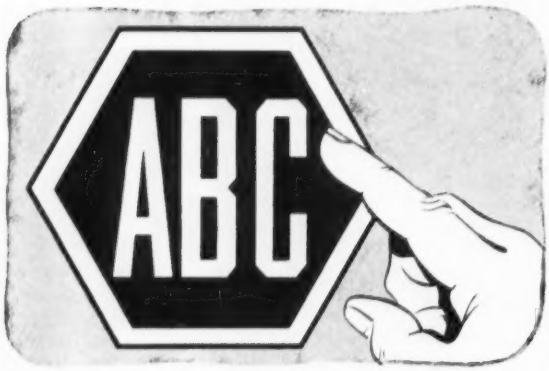

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(American Cable Div.) 54
(Wright Hoist Div.) 174
American Hoist & Derrick Co. 188-189
(Crosby-Laughlin Div.) 227
American Manganese Steel Div.
American Brake Shoe Co. 50
American Photocopy Equipment Co. 164-165
American Steel & Wire Div.
U. S. Steel Corp. 38
Armco Drainage & Metal Pdts., Inc. 234
Atlas Copco/AB 17
Atlas Powder Co. 176-177
Austin-Western Works, Baldwin-Lima-Hamilton Corp. (Const. Equip. Div.) 119
Autocar Div., White Motor Co. 140-141

B

Baldwin-Lima-Hamilton Corp.
(Const. Equip. Div.-LIMA WORKS) 195
Barber-Greene Co. 22
Barco Mfg. Co. 190
Bay City Shovels, Inc. 104
Bethlehem Steel Co. 191, 229, 241
Broderick & Bascom Rope Co. 2nd cover
Bucyrus-Erie Co. 18, 174, 216
Buffalo-Springfield Roller Co.
Div. of Koehring Co. 64
Bullard Co., E. D. 44
Butler Bin Co. 208

C

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Chrysler Corp.
(Industrial Engine Div.) 35
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(Automotive Div.) 5
Cleaver-Brooks Co. 219
Cleveland Trencher Co. 133
Construction Machinery Co. 46
Crucible Steel Co. of America
(Calloy Div.) 151
Cummins Engine Co. 126-127

D

D-A Lubricant, Inc. 180
Dayton Sure-Grip & Shore Co. 193
Demag Baggerfabrik G.m.b.h.
Duesseldorf-Benrath, Germany 206
Dixon Valve & Coupling Co. 244
Dodge Corp., F. W. 226

E

Eimco Corp., The 166
Esso Standard Oil Co. 131
Euclid Div., General Motors 53, 56-57

F

Firestone Tire & Rubber Co. 243
Fleco Corp. 49
Flexible Steel Lacing Co. 224
Food Machinery & Chemical Corp.
(Florida Div.) 228
Ford Motor Co.
(Tractor & Implement Div.) 202
Foster Co., L. B. 88
Fuller Mfg. Co. 28

G

Galion Iron Works & Mfg. Co. 51
Gardner-Denver Co. 222
Gates & Sons, Inc. 240
Gates Rubber Co. 48
General Tire & Rubber Co., The 30-31
Goodall Rubber Co. 26
Goodrich Industrial Pdts. Co., B. F. 60
Goodrich Tire Co., B. F.
Div. of B. F. Goodrich Co. 1
Goodyear Tire & Rubber Co.
(Industrial Products Div.) 15
Gradall Division, Warner & Swasey Co. 214
Greer Hydraulics, Inc. 2
Griffin Wellpoint Corp. 174

(Continued on page 240)

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to cut costs tomorrow?

Rugged, non-twisting AIR HOSE?

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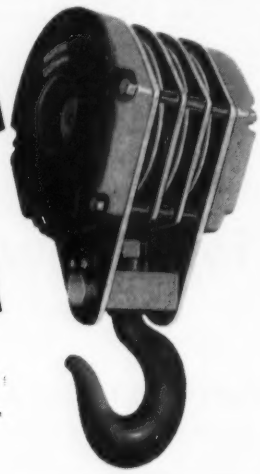

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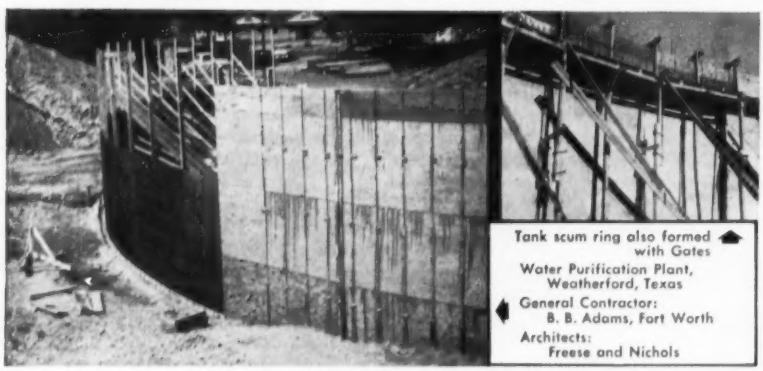

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Advertisers Index

Continued from page 239

Gulf Oil Corp. ... 58-59
Gurley, W. & L. E. ... 211

H

Hamilton Rubber Mfg. Corp.
Div. of Acme Hamilton Mfg. Corp. ... 122
Harnischfeger Corp.
(P & H Diesel Eng. Div.) ... 45
Hartford Fire Insurance Company Group ... 221
Hobart Bros. Co. ... 181
Homelite Div. Textron, Inc. ... 192-193
Hough Co., Frank G. ... 230

I

Ingersoll Rand Co. ... 233
International Harvester Co.
(Motor Truck Div.) ... 146-147
Iowa Mfg. Co. ... 163

J

Jackson Vibrators, Inc. ... 10
Jaeger Machine Co. ... 220
Johns-Manville
(Industrial Friction Materials) ... 199
(Transite Sewer Pipe) ... 113
Jones & Laughlin Steel Corp. ... 155
Johnson Co., C. S.
Div. of Koehring Co. ... 63

K

Kelley Machine Div.
Wiesner-Rapp Co. ... 207
Koehring Div. Koehring Co. ... 63
Kwik-Mix Co. Div. of Koehring Co. ... 63

L

Laclede Steel Co. ... 218
LaCrosse Trailer Corp. ... 242
Lehigh Portland Cement Co. ... 172
LeTourneau-Westinghouse Co.
21, 23, 25, 27, 29
Lincoln Electric Co., The ... 114
Link-Belt Speeder Corp. ... 81
Luber-Finer, Inc. ... 244
Lubriplate Div.
Fiske Bros. Refg. Co. ... 224

M

Mack Trucks, Inc. ... 65, 66-67, 68-69, 70
Macwhyte Co. ... 3, 209
Madesco Tackle Block Co. ... 240
Malsbary Mfg. Co. ... 201
Marion Power Shovel Co.
Div. of Universal-Marion Co. ... 213
Marquette Mfg. Co., Inc. ... 132
Master Builders Co. ... 3rd cover
Master Vibrator Co. ... 203
Mayo Tunnel & Mine Equipment ... 216
Miller Electric Mfg. Co., Inc. ... 154
Miller Tilt-Top Trailer Co. ... 200
Mixermobile Manufacturers, Inc. ... 162
Moretrench Corp. ... 161
Motorola Communications & Electronics, Inc. ... 139

N

Naylor Pipe Co. ... 210
Nelson Stud Welding Div.
Gregory Industries, Inc. ... 107
North America, Insurance Co. of ... 187
Northwest Engineering Co. ... 7

O

Oliver Corp., The ... 135
Owatonna Tool Co. ... 237
Owen Bucket Co. ... 20

P

Parsons Co. Div. of Koehring Co. ... 62-63
Patent Scaffolding Co., Inc. ... 84-85
Phillips Petroleum Co. ... 24
Porter Co., Inc., H. K.
(Quaker Rubber Div.) ... 239
Prime-Mover Co., The ... 212
Proto Tools Co.
Div. of Pendleton Tool Industries, Inc. ... 204

R

Radio Corp. of America
(Communications Products) ... 217
Reo Div. The White Motor Co. ... 86-87
Richmond Screw Anchor Co., Inc. ... 216
Rockford Clutch Div. Borg-Warner ... 144
Roebling's Sons Corp., John A.
(Wire Rope & Strand Div.) ... 148
Rome Plow Co. ... 52

(Continued on page 242)

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THREADED RODS—We can supply these for almost any use, in nearly any length. Straight or bent, in single or multiple units, asphaltum-dipped or hot-dip galvanized.

ROLLED THREAD—Made in thread diameters up to and including $1\frac{1}{2}$ in.

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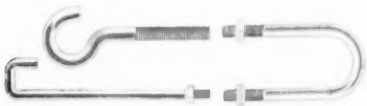

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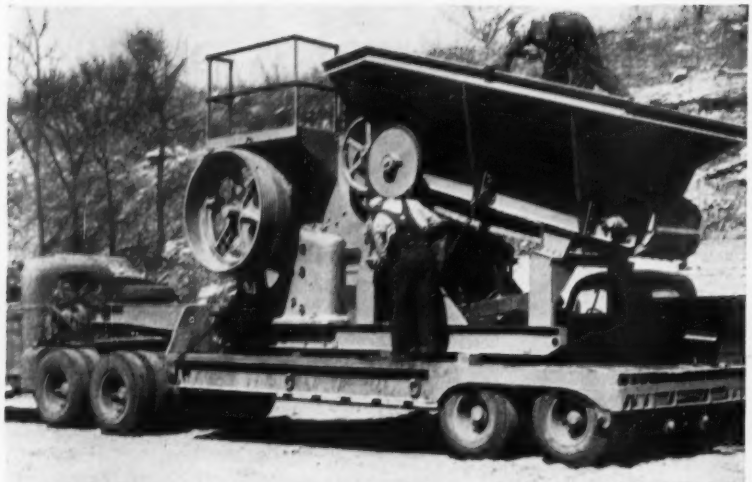


Skid-mounting the primary unit of this big-capacity crushing, screening and loading plant made it possible to "road it" on a LaCrosse low-bed — without violating highway load-restrictions.

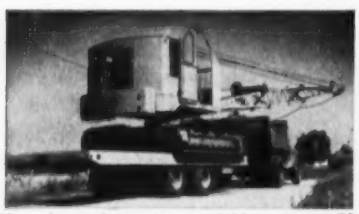
How to DOUBLE THE OUTPUT of your men and machines

To gain full advantage of today's high-production earthmoving and construction machines, it's important to *get them into action FAST* after each assignment. Waiting 3 or 4 hours for a big crusher or shovel can tie-up dozens of men, trucks, and other equipment that need to be kept busy.

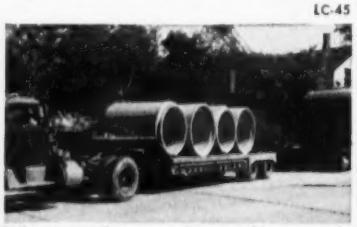
That's why smart contractors everywhere agree that *it pays to have several LaCrosse low-beds in your equipment* fleet, so you can "get your show on the road" in DOUBLE-QUICK TIME. This permits better scheduling of operations . . . often doubles normal output of men and machines. It also reduces costly downtime because you can rush *"crippled rigs"* into repair shops, and get them back on the job with minimum delay.

Most heavy machinery haulers prefer the popular *24-ton* LaCrosse DF6T tandem because it will *haul a greater variety of loads ANYWHERE — without permit complications.* However, LaCrosse builds more than 80 single and multiple-axle low-beds — from 6 to 75 tons capacity — with flat, drop or tilting platforms — *for every hauling need.* Call your nearest LaCrosse distributor, for complete facts and figures. LaCrosse Trailer Corp., LaCrosse, Wis., U.S.A.

LC-45



Shovels and tractors weighing up to 22 tons can now be moved by inexpensive LaCrosse tilt-trailers and standard trucks. One man can load or unload equipment in 5 minutes, without skids or planking.



When not busy moving machinery, a LaCrosse low-bed comes in handy for hauling and stockpiling culvert pipe, timbers, reinforcing, paving forms and many other supply-items needed to keep jobs on schedule.

Heavy metal fabricating since 1865

LaCROSSE

VALUE LEADER IN LOW-BED TRAILERS

Advertisers Index

Continued from page 240

S

Safway Steel Products, Inc. 169
Sauerman Bros., Inc. 194
Schramm, Inc. 215
Shell Oil Co. 170-171
Sinclair Refining Co. 32
SKF Industries, Inc. 11
Skil Corp. 40-41
Smith & Co., D. B. 231
Snap-on Tools Corp. 223
Spanall of the Americas, Inc. 12
Standard Dry Wall Products 232
Standard Oil Co. of California 47
Standard Oil Co. (Indiana) 142-143
Sterling Wheelbarrow Co. 220
Stoody Co. 78-79
Superior Concrete Accessories, Inc. 179
Symons Clamp & Mfg. Co. 34

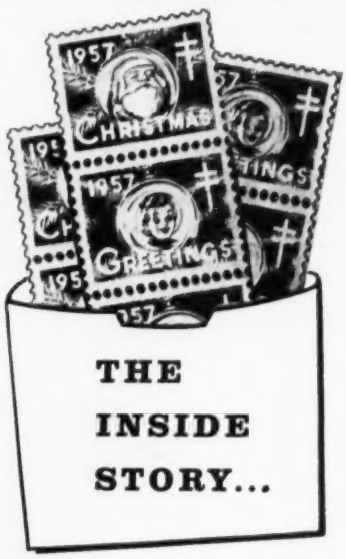
T

Templeton Kenly & Co. 181
Texas Co. 8-9
Thew Shovel Co. 145
Timken Detroit Axle Div.
Rockwell Spring & Axle Co. 152-153
Timken Roller Bearing Co. ..... 4th cover
Tousey Varnish Co. 110
Tractomotive Corp. 175
Travelers Insurance Companies, The 16
Twin Disc Clutch Co. 205

U

Unit Crane & Shovel Corp. 55
United States Rubber Co.
(Mechanical Goods Div.) 36

(Continued on page 244)



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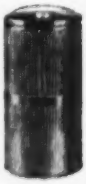
Only a Luber-finer Unit Plus a Genuine Luber-finer Pack can give the Exclusive Patented Filtering Process that has made Luber-finer The Standard of The Industry Since 1936!!



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Luber-finer Units are Standard and Optional Equipment on America's Leading Diesel Trucks, Tractors, Stationary Engines.

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Advertisers Index

Continued from page 242

U. S. Steel Co. (High Strength) 183
Universal Form Clamp Co. 198

V

Vermeer Mfg. Co. 208
Vickers, Inc.
Div. of Sperry Rand Corp. 33

W

Wagner Electric Corp. 200
Warner & Swasey Co. (Gradall Div.) 214
Water Seals, Inc. 4
Westinghouse Air Brake Co.
(Industrial Pdts.) 76-77
Whiteman Mfg. Co. 19
Willson Pdts. Div. Ray-O-Vac Co. 178
Willys Motors, Inc. 75
Wood Co., John (Bennett Pump Div.) 231
Wright Hoist Div.
American Chain & Cable Co., Inc. 174
Wrought Washer Mfg. Co. 182

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F. J. Eberle, Business Manager

Employment Opportunities 245
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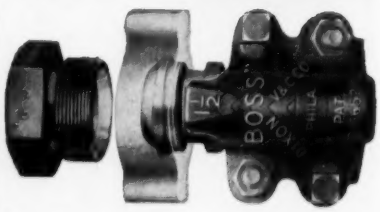

The original *washerless* coupling that is unequalled for *safety* in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal...no lost or worn-out washers to replace. All parts malleable iron or steel, thoroughly rustproofed. Furnished with super-strong "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

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Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Will prove equally efficient and economical for all applications where standard iron pipe nipples are normally used. Each size fits same size hose . . . oversize hose not required. Coupling consists of I.P.T. male stem and "Boss" Offset and Interlocking Clamp. Steel or malleable iron, thoroughly rustproofed. Sizes ¼" to 6", inclusive.

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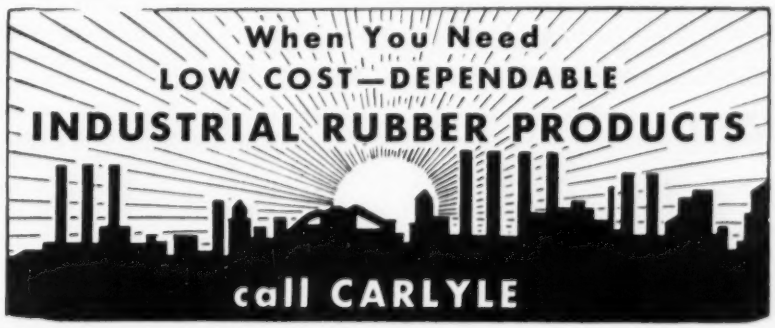

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Methods Memo...

Poetry in Building

Author Carl Sandburg inspects building construction in Chicago to gather material for a poem about Chicago's building renaissance. He will read his poem at a banquet during Chicago Dynamic Week.

Mayor Richard J. Daley proclaimed the week beginning October 27 Chicago Dynamic Week to focus national attention on the history and current accomplishments of builders in Chicago. Special events of the week will include a meeting on city building problems and a curtain wall workshop to discuss new building forms, materials, and techniques.

World Construction Program

Leaders of the construction industry will meet in Chicago Dec. 10 to discuss plans for a five-year World Construction Program. Purpose of the program will be to stimulate technical progress in the industry.

Dean Harold B. Gotaas of the Northwestern University Technological Institute outlined some of the plans for the program last month at a meeting sponsored by the Chicago Building Congress.

He pointed out that the construction industry has become the largest industry in this country. "But it is obvious," he said, "that this vast industry is only on the threshold of achieving a greatness far beyond anything we have heretofore visualized. To keep pace with other segments of our national economy, action should be taken now to accelerate technical progress to match that of other leading industries."

The proposed World Construction Program has been approved by the national conventions of the American Institute of Architects and the American Society of Civil Engineers. Highlights of the program would include observance of 1960 as World Construction Year to be followed by a World Construction Congress in 1961.

Tentative plans call for preliminary meetings next year of all American cooperating groups. During 1959 meetings would be held in Europe and Asia, and an international executive committee would assemble final plans for the World Construction year.

Each participating nation will be asked to launch at least one major, large-scale construction project during World Construction Year. The project should be chosen to demonstrate advanced techniques of research, design, and construction.

AGC Nominates Officers

The midyear board meeting of the Associated General Contractors of America nominated Fred W. Heldenfels, Jr., of Heldenfels Brothers, Corpus Christi, Tex., to be 1958 AGC president. It named James W. Cawdrey of Cawdrey & Vemo, Seattle, Wash., to be vice president.

Election of officers and of 27 national directors will be by mail ballot during December. The New officers and directors will be installed at the AGC's 39th annual convention in Dallas, Feb. 10 to 13.

The midyear board meeting took place in Seattle with more than 500 representatives of leading construction firms present. In addition to nominating 1958 officers, the meeting:

- Recommended that Congress study problems arising under the Davis-Bacon Act with a view to making needed amendments.
- Called for legislation to strengthen the Taft-Hartley Act's ban on secondary boycotts and to eliminate the "no man's land" existing in federal-state jurisdiction over unfair labor practices.
- Approved steps to establish a national joint cooperative committee between the AGC and the four major groups representing mechanical specialty contractors. An exploratory meeting between the AGC and the Mechanical Specialty Contracting Industries, Inc., was set for Sept. 25 in Washington, D.C.

Green Book Ready

Associated Equipment Distributors has completed its 1957 "Green Book" of rental rates for construction equipment.

The 1957 edition contains more than 80 pages of national average rental rates for some 2,000 items of construction machinery. Rental rates were established by an AED survey conducted during May and June among the 700 AED members in the U.S.

"Compilation of Rental Rates for Construction Equipment" is available at $5 per copy from Associated Equipment Distributors, 30 East Cedar St., Chicago 11, Ill.

guide to BETTER CONCRETING*

Seal in the moisture.

curing makes better concrete

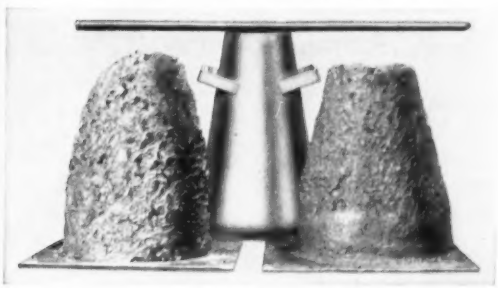
Concrete must be cured to obtain its full value as a building material. Correctly cured concrete has higher strength, less shrinkage, less cracking and a better surface. Curing should begin as soon as possible after concrete hardens.

Membrane curing is the most practical method, as it can be put on the moist surface immediately after the final finishing operation, or when the forms are stripped. For helpful information on curing, ask for a copy of our guide "Curing Makes Better Concrete."

*From booklet by this name. Covers points that can make the difference between a good job and a poor one. Copy on request.

a quiz on CONCRETE

Pozzolith Produces Greater Workability
With Lower Water Content



PLAIN MIX		POZZOLITH MIX
6.75 gallons	W/C	5.63 gallons
2 inches	SLUMP	3 inches

Question: How can I get easy, fast finishing . . . at lowest end-cost?

Answer: With Pozzolith, which *increases* workability, even though not as much water is used — see illustration at left.

Increased workability makes *easier* placing . . . lower water content makes *faster* finishing. Lower water content also reduces cracking.

To get this lowest-end-cost, better quality concrete, specify Pozzolith Ready-Mixed Concrete — available from your local ready-mix dealer.

THE MASTER BUILDERS CO.

Division of American-Marietta Company

Cleveland 3, Ohio—Toronto 9, Ontario Cable Address, Mastmethod, N. Y.

POZZOLITH MAKES BETTER CONCRETE

ozzolith Ready-Mixed Concrete makes available owest possible unit water content for a given orkability . . . for dense, segregation-free foundations and other concrete construction.

With Pozzolith Ready-Mixed Concrete, control of rate of hardening gives desired handling and finishing time under widely varying job conditions . . . for slab and other concrete work.

Control of entrained air, another Pozzolith Ready-Mixed Concrete feature, provides optimum air content without sacrificing other qualities . . . for sewage plants and other exposed concrete.

LOCATION: *Flood control project on Will's Creek, Cumberland, Md.* **OPERATING CONDITIONS:** *Soft to medium limestone*

TIMKEN® multi-use bits most economical, gave lowest cost per foot-of-hole in Maryland flood control project

. . . says E. J. Albrecht Company of Chicago, Illinois

IN drilling through soft to medium limestone on a flood control project in Cumberland, Md., E. J. Albrecht Co. got lowest cost per foot-of-hole with Timken® multi-use rock bits. With correct and controlled reconditioning, Timken multi-use bits give the lowest cost per foot-of-hole when full increments of steel can be used in ordinary ground.

But in hard, abrasive ground, Timken carbide bits would have been the best bit to use. They give you higher speeds and greater economy in extremely deep holes, constant gauge holes, small diameter blast holes.

Both Timken multi-use and carbide insert bits are time-savers. They're interchangeable in the same thread series. Dozens of different bits fit the same drill steel. Bit-changing goes fast and easy right on the job.

Timken rock bits are made from our own electric furnace fine alloy steel. And they have special shoulder unions to protect threads against drilling impact.

For help in selecting the best type bit for your jobs, to cut your drilling costs, write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit for every job

See the next Timken Televent hour, "The Innocent Years" over NBC-TV, Thursday night, November 21st.